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./Steven Toaddy

This I have written a good 2 weeks prior to its publication (and that's the first thing that I should convey—please forgive any of the authors of the articles in this quarter's issue of *TIP* if they fail to address the ongoing crisis because, well, there was none when they sent me their materials), so I would hope that I'm not barking up the wrong tree here, but what can we learn from such a large segment of employees being made into teleworkers (or transformed otherwise) essentially overnight?

I don't know yet, but I suspect that it will have not been terribly gently executed – it couldn't be, could it? The point was not to be gentle but to be effective. So be it. I want to use this opportunity, personally, to understand more viscerally what asking someone to engage in telework means to that person. With the essential difference that many now are—surprise!—responsible for caring for children during the entire work week, this might be like what it feels to have the physical environment of work, of the workplace, wrested away from us. Consider for yourself, if this happened to you as it has to so many of us: This was not a change that you orchestrated (I suspect), but was it a change that you had desired? Was it one for which you had advocated long before its unexpected occurrence? Or perhaps was it one against which you had fought, preferring for whatever reason to change physical locations demarcate work and nonwork times, preferring to be co-present with your colleagues?

Either way (or any of the numerous other points betwixt), did you have colleagues who felt differently from you? What were their positions, their preferences, their arguments? Were you vindicated and/or have you changed your stance?

If and to whatever extent we return from this spell of transformation, I would say that we have used the opportunity to identify how our field can aid in driving such change more effectively in the future. If and to whatever extent we don't return, I would that say we quickly determine how to provide for those things that we and that others have lost in the change. I'm sure that we'll all understand this world a little better, in part because of the work that you do.

Anyway: great stuff in this issue; I would hope that it keeps you engaged with our (usually almost entirely virtual anyway) Society. There's still—or perhaps even to a greater extent than there was previously—great work to do, such as that described in Liberty's award-winner pieces ([here](#) and [here](#)) and in this edition of The Bridge; there are things to learn about [how to teach](#), [how to learn](#), and [how to practice in this legal context](#); and yes, Chris, we do have a problem (oh, [you were talking about a different one](#); yes, I see that that's less clear). Thanks for reading.

Opening Up: Replication Crisis...or Opportunities and Challenges?

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Welcome to your second class on open science in I-O psych! Today, I'll discuss key questions: What are questionable research practices? What do replication failures in areas adjacent to I-O psychology mean for our field? What do we want open science to be about? I do not promise to offer full answers to these questions here. Still, my hope is that my sensemaking (a) taps into some dissatisfaction with the status quo and (b) leaves you wanting to make meaningful changes in the right direction—however small.

To get things started, I'd like to share details from an ongoing conversation with a fellow junior social scientist at my home institution concerning the replication crisis. At the beginning of the semester, like most universities, we held a convocation, giving the faculty a chance to catch up with one another after the long winter break. There, a conversation sprung up with a colleague in the College of Business Administration—an economist—about the replication crisis and the need for open science. He recently picked up Susannah Cahalan's *The Great Pretender* (Cahalan, 2019), which chronicles an investigation into a well-known study in psychology published in the eminent journal *Science*: David Rosenhan's "On Being Sane in Insane Places." This study into what has become known as pseudopatients highlighted how eight psychologically healthy individuals feigned mental illness in order to be admitted to a psychiatric facility. Once admitted, these pseudopatients revealed they were actually sane. Subsequently, none were allowed to leave, according to Rosenhan. Rather, as Rosenhan reported, the claims were seen through the lens of mental illness, which was then used to justify their retention. Rosenhan's work was pivotal; it influenced the third edition of the *Diagnostic and Statistical Manual for Mental Disorders*. Cahalan's book reveals details about Rosenhan's methods, some of which might fall under the broad umbrella term of "questionable research practices" (QRPs), that ultimately call into question his contribution.

What Are "Questionable Research Practices" (QRPs)?

QRPs are often subtle practices such as excluding data or changing analytical strategies until desired results are achieved and failing to report these activities (John et al., 2012). QRPs can involve analyzing one's data in a multitude of ways until you can have a clean and coherent story to tell using conventional statistical criteria (e.g., a p value less than .05; indices that indicate acceptable model-data fit in structural equation models). QRPs can also include dropping observations (e.g., outliers), dropping conditions that did not work out in an experiment, post-hoc inclusion or exclusion of control variables, switching outcome measures, dropping unsupported hypotheses, and stopping data collection once a p value less than .05 has been attained. These practices are also commonly referred to as p -hacking, data dredging, researcher degrees of freedom, traversing the garden of forking paths, or going on fishing expeditions (Gelman & Loken, 2013; Wicherts et al., 2016). Essentially, exploratory data analysis—useful for hypothesis generation—is recast as confirmatory, violating a fundamental distinction crucial to scientific advancement (Kerr, 1998).

Highlighting p -hacking in our own literature, O'Boyle and colleagues (2019) examined the prevalence of outcome reporting bias in moderated multiple regression (MMR) analyses, which are popular approaches often paired with small effect sizes and insufficient statistical power to detect these effects (e.g., Murphy & Russell, 2016). In examining the distribution of p values from published MMR analysis, there was a substantial spike in values just below the .05 threshold, suggesting that p -hacking or more

clearly fraudulent behavior can explain this phenomenon (e.g., “rounding down” to a p value). Focusing in on when unsupported hypotheses are dropped, O’Boyle et al. (2017) found that the ratio of supported to unsupported hypotheses more than doubled (.82 to 1.00 versus 1.94 to 1.00) because (a) statistically nonsignificant hypotheses were subsequently dropped, (b) statistically significant hypotheses were added, and (c) data were altered. As another example, in examining the literature on QRPs in confirmatory factor analysis in top-tier management literature (e.g., misreporting model data fit statistics, reporting mathematically impossible findings), Crede and Harms (2019) estimated a high base rate of QRPs (> 90%).

Though these figures paint a picture of rampant QRP behavior in the field, it should be kept in mind that although some reports suggest QRPs are widespread and incredibly common (e.g., ~90% of scholars, see Banks et al., 2016; Bedeian et al., 2010; Crede & Harms, 2019), other scholars provide evidence that QRPs are less prevalent (see Fiedler & Schwarz, 2015) and may be explained by relatively few authors engaging in a large number of QRPs (Brainard & You, 2018). Also, though it may be tempting to point to bad actors, the vast majority of individuals probably want science to produce credible insights. Unfortunately, novelty and clean narratives can be favored over transparency, leading to bad science being “naturally” selected by the system (see Smaldino & McElreath, 2016).

One aim of open science is to eliminate QRPs. Ideally, researchers generate and specify hypotheses, design a study to test these hypotheses, collect data, analyze and interpret the data, and then publish the results in a *transparent* manner. This is the hypothetico-deductive approach to scientific advancement. Scientific inquiry adds to our knowledge base when scientific norms privilege methods over results (see Merton, 1973). However, when findings are privileged over methods, QRPs emerge distorting the scientific record (see Figure 1; adapted from Chambers, 2019).

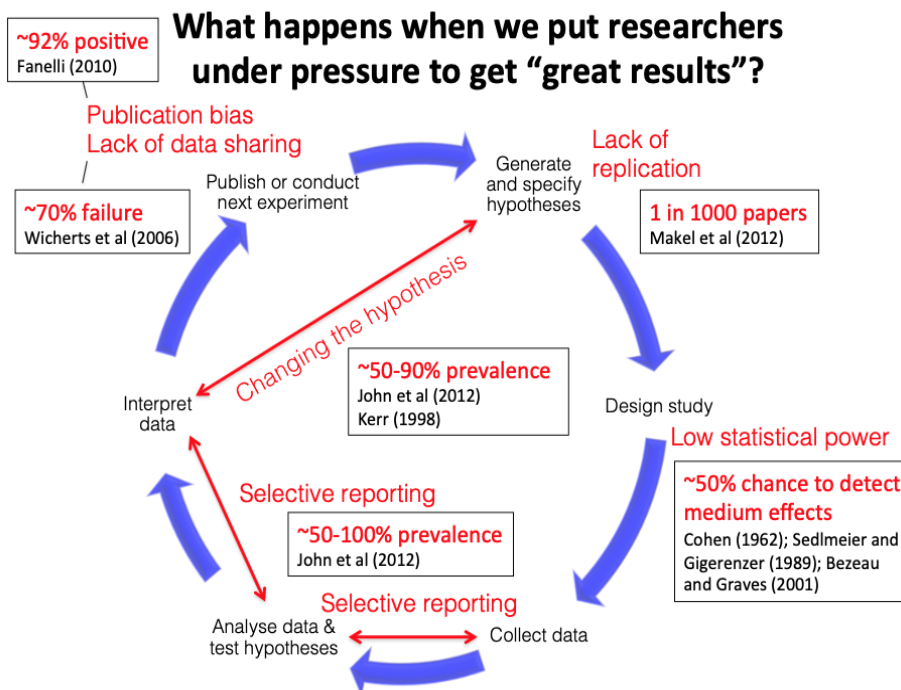


Figure 1: Questionable research practices prevent the hypothetico-deductive model from working

Note: Though adapted with permission from Chambers (2019), it is worth noting that his (and much open science work) adopts a CC0 license, allowing others to build off of prior work without permission.

I think we can all agree that QRPs—however prevalent—harm the scientific record (Nelson et al., 2018) and ought to be nullified. As noted by Aguinis et al. (2018), without transparent reporting of study findings, we cannot know whether what we are reading is true, which is one reason why the open science movement is so popular: It fundamentally represents a push to change the system into one that allows scholars to tell it like it is (Tell it like it is, 2020). When we lose access to strategies that have been tried in the past, we cannot act on all relevant sources of information because the literature is biased towards positives, many of which are false (Nelson et al., 2018). What seems needed, though, are tactics that allow authors to be transparent without harming their own careers.

How Much of Psychology Is True?

Returning to my conversation with my colleague, we discussed a topic of mutual interest, namely, our respective discipline's unique contributions to the social sciences. His reading of Cahallan's *The Great Pretender* prompted him to ask me a question that has been asked time and time again in both academia and in the public writ large: "Is anything in psychology true?"

The overall aim of my response was to keep the baby while throwing out the bathwater. I started with the bathwater and validated his observation. Yes, there are bad actors within any given scientific discipline who engage in outright fraud and deception. Examples in psychology also include Diederik Stapel (see Chambers, 2017) and perhaps even Hans Eysenck (Retraction Watch, 2020). Examples exist elsewhere though; an example outside of but adjacent to I-O psychology (i.e., strategic management) is Ulrich Lictenthaler (see Tourish, 2019). Also, although retractions across the sciences have been growing over time (Fanelli, 2013), they have leveled off (Brainard & You, 2018). Less dramatic and more common though are cases of QRPs. Notable cases here include Amy Cuddy's work on power posing (see Crede, 2019) and Fred Walumbwa's work in the authentic leadership (for a summary, see Tourish, 2019).

I also tried to put us both in similar boats. As social sciences, economics and psychology have similar issues that mirror broader trends. Positive results appear quite frequently across all of the sciences yet appear more frequently across the social sciences, including economics, psychiatry, and business (see Fanelli, 2010, 2012). Although all scientific disciplines favor positive results, such confirmation bias appears particularly pronounced in the social sciences (see Fanelli, 2010). Indeed, Kepes and McDaniel (2015) pointed out how most hypotheses in the I-O psychology literature are confirmed. One interpretation of these findings is that we are reaching omniscience! More likely it would seem is that negative results are consistently suppressed, a point long established in the literature (i.e., the file-drawer problem or publication bias, see Rosenthal, 1979). Also, though psychology has been charged with using statistically underpowered studies and publishing inflated effects (see Fraley & Vazire, 2014; Smaldino & McElreath, 2016; for an example from I-O psychology, see O'Boyle et al., 2017), so too has economics been charged (Ioannidis et al., 2017). Though replicated effects in psychology are generally lower than initial estimates (e.g., Camerer et al., 2018), the same appears to be true in economics (see Camerer et al., 2016; Chang & Li, 2015). In other words, replicability in the social sciences is far from guaranteed (see Camerer et al., 2018; Many Labs 1, Klein et al., 2014; Many Labs 2, Klein et al., 2018; Many Labs 3, Ebersole et al., 2016; Many Labs 4, Klein et al., 2019; Open Science Collaboration, 2015) with rates varying from 25% (Open Science Collaboration, 2015) to over 75% (Klein et al., 2014).

My colleague quickly suggested that economics is more replicable and reproducible because certain transparency-inducing practices had been normalized in the field (e.g., use of mathematical/formal modeling, using data that were open and accessible to others, etc.). I agreed that these practices are

most certainly helpful and not uniform throughout psychology. Indeed, calls for researchers to use formal modeling are common throughout our history (see Meehl, 1978; Marewski & Olsson, 2009). Still, findings produced in the lab may not replicate in the field, and there is some evidence to suggest that I-O psychology looks pretty good when compared to economics and management. In comparing effects detected in the lab to those detected in the field, Mitchell (2012) found that results from I-O psychology most reliably predicted field results. The same may not be true for many areas of economics (see Dubner, 2020). In regard to management, Pfeffer and Fong (2002) pointed out that less than one-third of tools and ideas that companies pay management consultants to use come out of academia and that those that do originate in universities are used less often and abandoned more frequently. Given valid and recurring complaints about the primacy of irrelevant theory in management scholarship (see Antonakis, 2017; Habrick, 2007; Landis & Cortina, 2015; Tourish, 2019), I suspect that things have not gotten better since Pfeffer and Fong made their observation.

I then pointed out that some pockets within the psychological sciences are more replicable than others and shifted the conversation closer to my own research area: personality and individual differences at work. For instance, one recent preregistered, high-powered replication revealed that correlations linking personality traits (i.e., the Big Five) to consequential life outcomes were quite replicable (87% of linkages replicated, though the effects are also weaker than the initial estimates; Soto, 2019). Of course this literature is not flawless; there is evidence of publication bias here as well. For instance, meta-analytic research on the validity of conscientiousness in the prediction of job performance appears to be inflated by roughly 30% (see Kepes & McDaniel, 2015). However, on the whole the individual differences literature appears more replicable by comparison to other areas of psychology, such as social psychology.

Does it matter that some areas are more replicable than others? Consider the following thought experiment: If nearly 100% of studies were, indeed, replicated in any area (Gilbert et al., 2016 suggest this possibility), could we still point out problems with our literature? Could replicability be *too* high? Possibly. As Bryan Nosek, who directs the Center for Open Science put it: “Achieving 100% reproducibility on initial findings would mean that we are being too conservative and not pushing the envelope hard enough” (see Owens, 2018). For instance, in personality and individual differences, the content validity of our measures is usually built in, and so failures to find correlations linking (for instance) conscientiousness to rule-following behavior would, therefore, be unusual. However, in social and organizational psychology, bigger and bolder ideas are considered, and these often come with many auxiliary hypotheses that make it difficult to render a claim falsifiable (see Landy et al., 2020; Świątkowski & Dompnier, 2017). Replication failures could be due to a variety of issues, such as a deficit of expertise. Indeed, in re-examining the Open Science Collaboration studies that estimated a rate of ~40% replicability, Gilbert et al. (2016) found that replicability improves to over 60% when samples and procedures employed by original authors are closely followed.

Does expertise guarantee replicability? A recent study from the open science community (i.e., Many Labs 4; Klein et al., 2019) sought to test experimentally whether expertise improved replicability in a specific theoretical domain: terror-management theory (TMT; Greenberg et al., 1994). TMT posits that human beings have evolved unconscious defense mechanisms to cope with a unique awareness of the finite nature of existence and the inevitability as well as the unpredictability of death. A central claim is this: Making mortality salient (e.g., asking someone to reflect on their own death) promotes behavior aimed at defending one’s cultural worldview. The empirical support for a moderate to strong mortality salience effect ($r = .35$) may be considered conclusive, coming from 277 experiments (164 published articles; see Burke et al., 2010) conducted over the past few decades and involving thousands of participants. Notably, Burke et al.’s prior meta-analysis used various methods to refute publication bias (i.e.,

funnel plots, fail-safe N, see Burke et al., 2010). Also notable is that organizational scholars elaborated upon TMT, linking mortality salience to power-seeking behavior in organizations (Belmi & Pfeffer, 2016); workplace aggression, discrimination, and punishment (Stein & Cropanzano, 2011); and prosocial motivations at work (Grant & Wade-Benzoni, 2009).

With Many Labs 4, Klein and colleagues (2019) sought to re-examine the mortality salience hypothesis using a variation of Greenberg et al.'s (1994) design to see if expertise improved replicability. To examine whether expertise mattered, 21 labs were randomly assigned the benefit of working with TMT experts who helped standardize study protocols (i.e., "Author Advised protocol"), which would presumably enhance the quality of the signal detected across sites. These protocols contained subtle details that were believed to be essential for replicating the mortality salience effect (e.g., labs were told to use laid-back research assistants dressed casually to create a relaxed mindset). Labs that did not receive expert protocols created their own based on reviewing the literature only (i.e., in-house protocols). All analyses and code were preregistered.

Most interestingly, Klein et al. (2019) *could not* reproduce the mortality salience effect in either condition (expert advised or not), posing an important challenge to TMT theory. Of particular note, Klein et al. (2019) point out that because the mortality salience effect could not be detected, they could not examine whether expertise mattered. Klein et al. (2019) suggest that a boundary condition—unknown by TMT experts—exists that could produce the null effect and should be incorporated into TMT theory. Klein et al. (2019) are also careful to point out that their null finding does not overturn the sum whole of the TMT literature. However, if expert advice on central findings prove insufficient to ensure the replicability of a foundational theoretical claim, then there is a great deal of work to be done to ensure that claims are robust and, for our purposes, worth drawing on from the standpoint of organizational scholarship (see also Srivastava, Tullett, & Vazire, 2020). Also, this study raises the possibility that what many of us think of as conclusive scientific evidence, a meta-analysis of experiments, may be less informative than we would like it to be, particularly when the literature contains false positives. Indeed, Nelson et al. (2018), who chronicle what they see as psychology's renaissance, raise concerns regarding such meta-analytic thinking, arguing that it actually exacerbates false-positive psychology. Now, we should not generalize the findings from Many Labs 4 to the whole of any particular literature—including our own. Yet, prior to Many Labs 4, the idea of discounting conclusive scientific evidence from a meta-analysis of experiments would have seemed absurd to me. Now, I'm willing to at least entertain the notion.

What Do We Want the Open Science Movement to Be About?

So where do I stand with my colleague? Our broader conversation about open science is ongoing. There are many principles that make for a robust science (e.g., transparency, relevance, rigor, replicable, etc.; see Grand et al., 2018), and these will pervade our conversation. I do not foresee us discussing how open science practices ought to be adopted out of obligation but rather focusing on simple yet effective tactics that in small part strengthen those Mertonian norms we aspire to as scientists (Merton, 1973). In becoming more open sciences, not only are we playing a role in strengthening our respective fields, we are also boosting the credibility of the social sciences writ large.

I hope that you got something out of my story. Perhaps now you can see ways to have more meaningful conversations with peers about open science (e.g., building from common ground—we're all figuring science out together), but perhaps you need more particular advice. Perhaps you've found errors in another's work and are unsure how to proceed. You'd like to do the right thing but fear reputational damages. You know that errors are an inevitable part of scientific progress but need more guidance on how

to correct the record. If you need guidance and support, then please consider reaching out for help; that is one reason why this column was created. Also, consider taking a look at Dorothy Bishop's work on navigating fallibilities in science (Bishop, 2017). Her guidance is commonly used and quite instructive.

Next Time on *Opening Up*

We move away from a discussion centered on putting people in similar boats to a discussion that emphasizes strategies for helping all boats to rise. Fred Oswald and I will share some simple-yet-effective strategies to promote transparency and reproducibility in our work. Furthermore, we'd like to celebrate positive developments in the field. What are the bright spots in our field where open-science practices are being adopted and leading to credible and meaningful insights? Who has found a helpful way to open up that has not received much attention? We'd like to celebrate those victories with future entries in *Opening Up*.

Addendum—March 6, 2020

After this article went to press, I learned more about the broader discussion on the Many Labs 4 study that should be shared. Specifically, Chatard et al. (2020) pointed out a significant deviation from the Many Labs 4 preregistration. Several studies included in Many Labs 4 did not attain a minimum sample size requirement (40 participants per condition) as specified in the preregistration. Once the results from these labs were excluded, which reduced the number of labs from 21 to 13, Chatard et al. found support for terror management theory particularly in the condition where hidden expertise was utilized. However, Hilgard (2020, February) found a bug in the Many Labs 4 code that, once accounted for, called into question the Chatard et al. correction. Therefore, the original conclusions put forward by Klein et al. (2019) appear to hold.

Although the discussion regarding Many Labs 4 appears to have settled for now, there are notable observations I'd like to make for our purposes. First, it is remarkable how quickly scholars can collaborate to make sense of a finding when data, code, and analysis plans are made transparent. Such work is happening outside of the conventional peer-review process in PsyArxiv and on social media platforms such as Twitter and Facebook. Second, the Chatard et al. (2020) critique raises an interesting point about the value of preregistration. They are correct to point out a meaningful deviation from preregistration that was undisclosed (i.e., retaining data that would be excluded if rules were followed). Scholars should clarify whether deviations are made, if any, and why. However, it is less clear that the deviations Chatard et al. take issue with are necessarily problematic in this case as Klein et al. (2019) utilized meta-analysis to account for sampling error. Had Klein et al. (2019) followed the sample size exclusionary rule they established in the preregistration, they would have introduced the very file drawer problem that meta-analysis addresses. In other words, preregistration, though encouraging transparency, can introduce constraints that—initially established in good faith—are later revealed as unnecessary when a study is underway.

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Texas Is Big on I-O

Anna Erickson & Melissa Kloner SIOP Local I-O Group Relations Committee

Although we will not be visiting the Lone Star State for SIOP's 35th annual conference, the SIOP's Local I-O Group Relations Committee would like to take a moment to highlight what else is happening in Texas in the world of I-O. Specifically, there are four local I-O groups that are making an impact for Texans.

Austin People Analytics Meetup



The Austin People Analytics Meetup is a local group that meets at the University of Texas at Austin in the business school. **Ethan Burris** (McCombs School of Business, UT Austin) and **Roxanne Laczo** (Hogan Assessment Systems) founded the group two years ago with the goal to provide I-O psychologists and others working in people analytics with a venue for networking, learning, and collaboration. The group meets about four times per year at the McCombs School of Business. Meeting attendance is free because all costs are covered by sponsoring organizations who pay for drinks and snacks. The group maintains an e-mail distribution list of approximately 250 people. Quarterly meetings typically draw between 50–75 people.

Austin is home to dozens of companies and the heavy presence of the tech industry means there is a strong appetite for using data to make decisions. The Austin People Analytics Meetup works to create a bridge between academics and industry and attracts a diverse group of HR professionals. Approximately

half of their members are also SIOP members, with 25–30 PhDs in I-O psychology—mostly practitioners. However, their membership consists of a diverse group of HR professionals including those working in benefits, diversity, talent selection, and employee acquisition.

Their advice to other local I-O groups: stories + data = interesting discussion. Stimulating dialogue about interesting topics contributes to the buzz following any event such that attendance tends to increase at the next meeting. Because of their broad membership base, they like to keep the presentations relatable to all by providing just enough detail to pique the audience's interest without providing so much detail that they lose the less technically savvy audience members.

If you're interested in learning more about the Austin People Analytics Meetup, reach out to Ethan Burris: ethan.burris@mcombs.utexas.edu.

Dallas Area Industrial Organizational Psychologists (DAIOP)



A little further north, **Adam Kabins** leads a local group called the Dallas Area Industrial Organizational Psychologists (DAIOP). This is a local group of I-O psychologists that meets about twice per year in the Dallas–Fort Worth area. Originally founded in 2002, DAIOP had become much less active 3–4 years ago. Like many local groups, it had lost momentum after a strong ten years or so. The group has now revitalized with more than 300 professionals on their distribution list and quarterly meetings that typically draw between 30 and 50 attendees.

The group offers free admission to anyone interested in attending the meetings by recruiting local firms to host the quarterly meetings. Varying the meeting type encourages attendance, as some meetings are exclusively networking-based events (i.e., “happy hour” gatherings), whereas others offer research summaries and other learning opportunities. One of their most popular meetings is the annual post-SIOP summary meeting in which 10–15 people present their key learning from the SIOP conference leveraging an “ignite” format. According to Kabins, the most valued service for most members is the job postings that DAIOP shares with all of its members. Each week, Kabins distributes between 5 and 10 job openings to DAIOP members via e-mail. If you're interested in attending a DAIOP meeting or being included in their e-mail distribution list, contact Adam Kabins at Adam.Kabins@kornferry.com.

Southwest Assessment Group (SWAG)



Another Texas-based group focusing on selection and assessment is the Southwest Assessment Group (SWAG), which distributes quarterly newsletters and meets semi-annually also in the Dallas area. This group is one of three local chapters of the International Professional Assessment Council (IPAC), which exists to promote state-of-the-art selection practices. SWAG works to create a forum to facilitate networking and best-practice sharing, and it also serves as a bridge between science, research, and practice. One goal is to provide a vehicle to pioneer new concepts related to employment assessment. As such, the organization welcomes not only I-O psychologists, but anyone with an interest in selection and assessment, including attorneys, HR leaders, and specialists working in staffing, recruiting, and organizational performance management. That said, SWAG's membership base is primarily I-O psychologists and most of their members are also members of SIOP. The group has strong representation from I-O practitioners working in public sector and government roles where selection research is taken very seriously.

In January, SWAG hosted their second semi-annual conference focused on human capital management, which was attended by more than 30 students and practitioners. Dr. Ben Dilla presented a walkthrough of the Cifton StrengthsFinder and provided all participants with a personalized profile. Also, Dr. Stephen Mueller presented best practices in human capital management and the future of I-O psychology in each of its focus areas.

If you're interested in learning more, you will find their website at <https://www.ipacweb.org/SWAG> and can reach the current SWAG President, Erin Smith, at erin.smith@dallascityhall.com.

Austin Association for Industrial/Organizational Psychology

Austin is home to one more local group that has been dormant for the last couple of years but is in initial stages of revitalization. The vision for the Austin Association for Industrial/Organizational Psychology (AAIOP) is to create a forum for Austin-based I-O psychologists to meet, network, educate, and share best practices with like-minded professionals. The group will provide an opportunity to talk about broad I-O topics integrated with some of the challenges we face as professionals on a local level. If you'd like to know more, express interest in joining, volunteer, or offer support, contact **David Dubin** (David@dubinadvisorygroup.com).

We Need You!

These are the local I-O groups that we know are active in Texas. Did we miss someone?

Unlike some other professional organizations, SIOP does not establish chapters that operate on a local level. The SIOP's Local I-O Group Relations Committee has been established to provide support for grass-roots local groups while respecting their autonomy and independent operation. As part of our work, we have created a tool kit to help you build or sustain a local group and a list of local groups with contact information which you can find here: <https://www.siop.org/Membership/Local-I-O-Groups>. If you know about a group that is not listed there or if the information we have is out of date, please let us know by sending an e-mail to Matthew Haynes: mhaynes@siop.org.

SIOP Award Winners: Does Grit Matter?
Meet the Team Who Won the Hogan Award for Personality and Work Performance AND
Was Honorable Mention for William A. Owens Scholarly Achievement Award!

Liberty J. Munson



As part of our ongoing series to provide visibility into what it takes to earn a SIOP award or grant, we highlight a diverse class of award winners in each edition of *TIP*. We hope that this insight encourages you to consider applying for a SIOP award or grant because you are probably doing something amazing that can and should be recognized by your peers in I-O psychology!

This quarter, we are highlighting the team that won the Hogan Award for Personality and Work Performance and was Honorable Mention for the William A. Owens Scholarly Achievement Award as told by **Peter Harms**.

What award did you win?

Our authorship team (with **Marcus Crede** [not pictured] and **Michael Tynan**, both at Iowa State University) won the Hogan Award for Personality and Work Performance and were an honorable mention for the William A. Owens Scholarly Achievement Award.

Read the article:

Credé, M., Tynan, M., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, 113, 492–511.



Above: **Peter Harms**
Below: **Michael Tynan**

Share a little a bit about who you are and what you do.

PDH: I'm a personality psychologist by training. Both Marcus Credé, the lead author, and I received degrees from University of Illinois at Urbana-Champaign. I currently work at the University of Alabama in the Management Department of the Culverhouse College of Business. My research areas include the assessment and development of personality, leadership, and well-being. A huge part of that research has been partnerships with the U.S. Army for the past 10 years.



Describe the research/work that you did that resulted in this award. What led to your idea?

PDH: Our research was essentially a meta-analysis concerning the validity of the recently popularized concept of "grit," the tendency to persevere and be passionate about one's goals. It has been the subject of best-selling books and a widely viewed TED talk but had not previously been closely scrutinized. Our paper found a number of reasons to question claims about "grit." Some of the most important reasons were that there had been a number of misleading claims about the factor structure, the predictive validity, and the "newness" of the concept. Our paper was able to provide a much more accurate assessment of the predictive value of grit, but it also found that it was not meaningfully different than the already identified, and widely known, personality trait conscientiousness.

What do you think was key to you winning this award?

PDH: I believe that a major determinant of the award was that we were challenging provocative claims that were being implemented in both companies and as part of national government policies. Grit has been labeled a “critical factor for success in the 21st century” by the U.S. Department of Education, and the government, along with major charitable organizations, are spending massive amounts of money to promote it in schools. When the stakes are that high, it is really important to have an accurate understanding of what we are talking about and how to measure it.

What did you learn that has surprised you? Did you have an “aha” moment? What was it?

PDH: The degree to which the positive effects of grit had been overstated in prior work. For example, in one paper, the results claimed that successful completion of completing a particularly difficult challenge was 99% more likely for individuals who were high on grit when the actual data showed that high-grit individuals were only 3% more likely to succeed. That’s the difference between a proverbial magic bullet and minor incremental contribution.

What do you see as the lasting/unique contribution of this work to our discipline? How can it be used to drive changes in organizations, the employee experience, and so on?

PDH: I hope that one of the contributions will be that organizations and scholars more closely scrutinize claims by science popularizers that “one simple trick” will change lives in a dramatic way. When you dig down into these claims, the reality rarely matches the rhetoric. We believe that the concept of grit as a combination of passion and perseverance should be abandoned due to lack of evidence. There’s nothing wrong with encouraging people to work hard to pursue goals, but the conceptualization and measurement of grit doesn’t stand up to scientific scrutiny. Although I’m skeptical as to whether our paper will change the rush to embrace grit, I would hope that I-O psychologists would consider it an ethical obligation to inform themselves and their clients as to the problems with grit.

How did others become aware of your award-winning work/research?

PDH: Well, we certainly didn’t hide what we were doing. We did the normal press releases and the article did appear in *Journal of Personality and Social Psychology*, which is probably the most read journal in social psychology. Marcus and I have also written a number of other articles calling into question widely accepted claims in the literature. So, perhaps some people came across this paper as a result of that work.

Learn more:

- Credé, M., & Harms, P. D. (2019). Questionable research and reporting practices when using confirmatory factor analysis. *Journal of Managerial Psychology*, 34, 18–30.
- Credé, M., & Harms, P. D. (2015). 25 Years of higher-order confirmatory factor analysis in the organizational sciences: A critical review and development of reporting recommendations. *Journal of Organizational Behavior*, 36, 845–872.
- Harms, P. D., Credé, M., & DeSimone, J. A. (2018). The last line of defense: Corrigenda and retractions. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 11, 61–65.

Who would you say was the biggest advocate of your research/work that resulted in the award? How did that person become aware of your work?

PDH: Probably former SIOP President **Fred Oswald** from Rice University. I don't know how he came across the paper, but he contacted us without being solicited and volunteered to nominate us.

To what extent would you say this work/research was interdisciplinary?

PDH: The foundational research for this work started in social/personality/positive psychology, and much of the original work was done in education settings. So, the research itself is the very epitome of interdisciplinary work. When we were nominated, our biggest concern was whether it would be perceived as "I-O enough" to be considered. I'm very grateful to the open-mindedness of the Awards Committee members for considering and selecting it.

Are you still doing work/research in the same area where you won the award? If so, what are you currently working on in this space? If not, what are you working on now and how did you move into this different work/research area?

PDH: Yes and no. I believe that all members of the authorship team are still doing work related to grit and its construct validity. But, more broadly, we've continued our work challenging received wisdom in the field of organizational science. For example, we've recently published a meta-analytic review in *Journal of Managerial Psychology* that suggests that the effects of transformational leadership, one of the most researched and widely taught models of leadership, can be largely accounted for by methodological factors and that its effects are highly variable across cultures.

Learn more:

Credé, M., Jong, J., & Harms, P. D. (2019). The generalizability of transformational leadership across cultures: A meta-analysis. *Journal of Managerial Psychology*, 34, 139–155.

What's a fun fact about yourself (something that people may not know)?

PDH: One of the deep ironies of my life is that I am a Canadian who was raised as a pacifist in the Mennonite faith, but I have been working with the U.S. military for more than a decade.

What piece of advice would you give to someone new to I-O psychology? (If you knew then what you know now...)

PDH: When I first entered graduate school, a senior I-O psychology grad student (**Sasha Chernyshenko**) took me aside and gave me some great advice. He told me not to get frustrated with the research and publishing process and that, in the end, good research would win out and be remembered. I've held on to that throughout my career, and I've tried to do things that mattered and to do them well. Much of my best work did not end up getting published in the "top" journals, but eventually it did get published; once it did, people found it and the citations followed. So, I guess the lesson is to be passionate about what you do and to persevere in the face of obstacles. In a word: grit. And a sense of humor never hurts.

About the author:

Liberty Munson is currently the principal psychometrician of the Microsoft Technical Certification and Employability programs in the Worldwide Learning organization. She is responsible for ensuring the validity and reliability of Microsoft's certification and professional programs. Her passion is for finding innovative solutions to business challenges that balance the science of assessment design and development with the realities of budget, time, and schedule constraints. Most recently, she has been presenting on the future of testing and how technology can change the way we assess skills.

Liberty loves to bake, hike, backpack, and camp with her husband, Scott, and miniature schnauzer, Apex. If she's not at work, you'll find her enjoying the great outdoors, or she's in her kitchen tweaking some recipe just to see what happens.

Her advice to someone new to I-O psychology?

- Statistics, statistics, statistics—knowing data-analytic techniques will open A LOT of doors in this field and beyond!

SIOP Award Winners: 2019 Distinguished Professional Achievement Award

Liberty J. Munson



As part of our ongoing series to provide visibility into what it takes to earn a SIOP award or grant, we highlight a diverse class of award winners in each edition of *TIP*. We hope that this insight encourages you to consider applying for a SIOP award or grant because you are probably doing something amazing that can and should be recognized by your peers in I-O psychology!

This quarter, we are highlighting the winner of the 2019 Distinguished Professional Achievement Award, **Seymour Adler**.



What award did you win?

SIOP's 2019 Distinguished Professional Achievement Award. I was nominated for this award by a long-time mentor, **Allen Kraut**.

Share a little a bit about who you are and what you do.

I am a partner at Kincentric, a global talent advisory firm, and I consult with client organizations on the design and implementation of a range of talent management practices, including leadership assessment and development, performance management, talent strategy, and selection testing. In addition, I have taught throughout my 40+ year career at the master's and doctoral levels, currently as an adjunct at Hofstra University's PhD program in Applied Organizational Psychology.

Describe the research/work that you did that resulted in this award. What led to your idea?

Early on in my career, with my partners at Assessment Solutions Incorporated, I adapted assessment center methodology for remote delivery, at scale and with psychometric rigor, to assess sales, customer service, and managerial skills. Over the years, we delivered live, multi-exercise, multi-assessor simulations on behalf of clients to over a half-million candidates.

Later, with my I-O colleague **Miriam Nelson**, we designed and delivered innovative methods for customer service performance monitoring and monitored hundreds of thousands of calls with a centralized team of professional I-O assessors. With Miriam, **Lorraine Stomski**, **Brian Ruggeberg**, and other I-O colleagues, we designed assessment tools and protocols that have guided hiring and promotion decisions for decades at leading global organizations. Our team also designed and delivered state-of-the-art holistic leadership development processes and programs for organizations large and small. More recently, I have tried to provide thought leadership to the more effective design and delivery of performance management processes. In addition, I have had the privilege and pleasure of teaching hundreds of graduate students over my 45 years of teaching, with so many in turn making meaningful contributions to research and practice in our field. These contributions were all noted in the award citation.

What do you think was key to you winning this award?

I think it was the combination of scientific rigor, practicality, and scale of these solutions.

What did you learn that has surprised you? Did you have an “aha” moment? What was it?

A big “aha” moment early on was when I took seriously one of the most well-established findings of our science—that mechanical combinations of quantified judgements were at least equal, and often superior, in validity to clinically aggregated composite judgements. For me, the implication was that assessment center administration would not only be more efficient but also more rigorous if ratings collected during exercises were mechanically combined to produce an overall score. We altered the then-standard assessment center practice accordingly and changed the way results from assessment centers were combined.

What do you see as the lasting/unique contribution of this work to our discipline? How can it be used to drive changes in organizations, the employee experience, and so on?

We demonstrated that high-touch assessment approaches can be delivered rigorously at large scale. Because the simulations were of high fidelity to target jobs, they enjoyed strong applicant credibility. Because they were rigorously designed, validated, and delivered, they were never legally challenged.

Who would you say was the biggest advocate of your research/work that resulted in the award? How did that person become aware of your work?

Allen Kraut was already a prominent I-O psychologist at IBM, and an assessment center thought leader, when as a freshly minted PhD I was just assembling my first assessment center. I first reached out to him “out of the blue.” He gave of his time and expertise unstintingly and has been a mentor, advocate, and inspiration ever since. **Joel Moses** at ATT also was an early mentor. Both are prior winners of this award. And, of course, over the decades, clients have been wonderful supporters of these practices and have been instrumental in spreading the word.

Are you still doing work/research in the same area where you won the award? If so, what are you currently working on in this space? If not, what are you working on now and how did you move into this different work/research area?

I have always been intrigued by every aspect of I-O, from the most I to the most O. I continue to work within that very broad space.

What’s a fun fact about yourself (something that people may not know)?

I received all of my formal education—from nursery school through a PhD—on Manhattan Island in New York City.

What piece of advice would you give to someone new to I-O psychology? (If you knew then what you know now...)

Never forget that your primary identity is as a psychologist and that your primary advantage over other very smart consultants from adjacent disciplines is our science. Even if you become a full-time consultant, never stop keeping up with key developments in theory and research. Talk to your fellow grad students who have pursued academic careers to understand what they and others in their network are thinking about and studying. I was blessed going through grad school with **Howard Weiss**, and our 50-year-long dialogue has been a source of inspiration and discovery throughout my career.

About the author:

Liberty Munson is currently the principal psychometrician of the Microsoft Technical Certification and Employability programs in the Worldwide Learning organization. She is responsible for ensuring the validity and reliability of Microsoft's certification and professional programs. Her passion is for finding innovative solutions to business challenges that balance the science of assessment design and development with the realities of budget, time, and schedule constraints. Most recently, she has been presenting on the future of testing and how technology can change the way we assess skills.

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Her advice to someone new to I-O psychology?

Statistics, statistics, statistics—knowing data analytic techniques will open A LOT of doors in this field and beyond!

Presidential Column Redux

Eden King

The original version of this column, drafted in January, began, “Wow, what a year! I’m grateful for this opportunity to reflect on the experience of being your president over the past year.” These words take on a new meaning as I revise this column on the day when the number of confirmed cases of COVID-19 in the United States surpassed those of every other country.

In times of crisis, Mr. (Fred) Rogers gently encouraged children to, “Look for the helpers.” My daughters and I have been talking about the farmers, medical professionals, janitors, police officers, firefighters, grocery store workers, and delivery service providers who are helping to take care of us. Today, my girls are going to make a “thank you” sign to put in our window in honor of these heroes.

I’d like to use this article as my personal THANK YOU sign to the helpers inside of SIOP. Some of these folks have taken on the very important and visible task of responding to the cancellation of our conference; the emergency task force members **Scott Tonidandel**, **Elizabeth McCune**, and **Alexis Fink**. These folks have taken on the enormous volunteer role of planning our beloved conference not just once (a herculean task in and of itself) but now, in fact, twice. Less visible but equally critical are the conference subcommittees who are working to find innovative strategies for sharing content like the Theme Track (Chair **Emily Solberg**), Consortia (Consortium Chair **Debbie DiazGranados**), Workshops (Chair **Rob Michel**), and Placement Center (Co-Chairs **Amber Burkhart** and **Gonzalo Ferro**) committees.

Moreover, SIOPers have stepped up to help not only our professional community but also society at large. Even as we were working to unwind Austin activities, volunteers in the Education and Training Committee (Portfolio Officer **Marcus Dickson**) were creating webinars, holding virtual office hours, and creating materials to help IO educators transition to online learning environments (<https://www.siop.org/GIT-Blog/entryid/253>). Our membership committee (Chair **Tiffany Poppelman**) was creating a strategic communication plan to continue to offer value to our members. Volunteers in the Professional Practice Portfolio (Officer **Tracy Kantrowitz**) were synthesizing and cultivating summaries of our science on remote work (<https://www.siop.org/Business-Resources/Remote-Work>). I’m sure there are amazing things happening that I don’t even know about it. I couldn’t be prouder.

Additionally, if any of you have had the pleasure of working with the staff in SIOP’s Administrative Office, it will come as no surprise to you that our dedicated staff has more than stepped up to the challenges we are facing. This small but mighty core of SIOP continues to not only support but also inspire all of the work that we do together. Their ongoing efforts ensure SIOP’s bright future, and we are truly lucky to have them.

When you receive this, my year as president will be nearly over. Yet, I am certain that the gratitude I feel for our community will persist long after my term ends.

And, like Mr. Rogers said, I’ll be so very glad when we’re together again.

Max. Classroom Capacity: How Should We Teach Ethics in I-O Psychology?

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I always tried to technically follow the rules, but I also undermined the principle of the rule by finding the loophole. - Andrew Fastow, former CFO of Enron, released from prison in 2016.



The recent flurry of ethics scandals in work organizations (e.g., Wells Fargo, Boeing, Facebook), sports (e.g., Houston Astros), entertainment (e.g., Harvey Weinstein, sexual harassment at CBS, NBC, and Fox), higher education (“Operation Varsity Blues”), and the U.S. government (take your pick!) have made me think about how we teach ethics and what we can do to cope with this crisis of ethics. One might argue that we are in a golden age of scandal and corruption, and at a nadir of public trust in institutions. A [2019 Pew Research Center report](#) noted that in the USA, public trust in the government has been on a steady decline since the 9/11 terrorist attacks and is close to its lowest point in the past 60 years, which occurred during the Obama administration in 2011. [Public trust](#) in medicine, education, and the press have also declined in the USA (Trust in the scientific community has remained steady—yay, that’s us!—whereas trust in the military has increased.). [The following percentages of Americans](#) think that members of these groups behave unethically some, most, or all of the time: members of congress (81%), leaders of technology companies (77%), religious leaders (69%), journalists (66%), and police officers (61%). In addition to high-profile ethics scandals, there seems to be less legal accountability for those responsible for the kinds of ethics violations that typically concern I-O psychologists. According to data from the Justice Department analyzed by the [Transactional Records Access Clearinghouse at Syracuse University](#), prosecutions of white-collar criminals have been cut nearly in half between 2011 and 2018 (it seems unlikely that white-collar crime itself has decreased). This is despite white-collar crimes costing the USA several hundred billion dollars per year. President Trump’s recent pardons of several well-connected white-collar criminals of charges including fraud, racketeering, violating securities laws, cheating on taxes, lying to officials, and money laundering may lend further credence to the idea that ethics doesn’t matter. It’s important to note that ethics scandals are not unique to the US, and a [general distrust](#) of institutions is also in vogue in many countries including Australia, Germany, France, Japan, and the UK.

Although things may look particularly grim at the moment, educators have long recognized the importance of teaching business ethics. Let me pause here and say that I will dive into the research on business ethics courses, which may be more characteristic of business schools than I-O psychology programs, but we’ll come back to I-O again. Many *business ethics* and *business and society* courses were first developed in the 1950s (Weber, 1990). Prominent ethics scandals in the late 1980s (e.g., the savings and loan crisis) then again in the early 2000s (Enron, WorldCom) further motivated academics to bolster ethics content in curricula, this time influenced by Kohlberg’s (1976) theory of moral reasoning. Scandals in the mid to late 2000s (e.g., the subprime mortgage crisis) prompted another round of introspection, and a renewed push for corporate social responsibility and ethics coursework. Perhaps we’re starting yet another round now. But do business ethics courses work?

Before answering this question, it’s worth considering the different ostensible aims of business-ethics courses. For some the objective is to increase student awareness of and ability to identify ethical issues (e.g., is it unethical to ignore strict pollution standards when all of your competitors are doing the same?). For others, as suggested by Kohlberg, the objective is to develop students’ moral reasoning

(e.g., why is it wrong to bribe a government official to obtain a contract)? A third approach is based purely on compliance—teach students the rules and how to follow them. A fourth is to describe how social systems can produce unethical behavior (e.g., organizational culture, the power corruption cycle). I'm sure there are other approaches, too. Given these different objectives, relevant outcomes of ethics courses include ethical awareness, moral reasoning, and/or ethical behavior, among others. OK, back to the question, do business ethics courses work?

Attempts to empirically evaluate the effectiveness of business ethics courses go back to at least the late 1980s. Waples, et al. (2009) meta-analysis provides a comprehensive summary of this research. First, they found a small effect overall for business ethics instruction on outcomes, but moderators were present. Second, in terms of criteria, ethics instruction had a medium to large effect on moral reasoning, a small effect on ethical awareness, and no beneficial effect on ethical behavior (there were only two studies on ethical behavior). Third, content focusing on job specific compared to global ethical skills worked better. Fourth, course content that focused on cognitive reasoning compared to training ethical behaviors worked better. Fifth, professional ethics workshops or seminars were much more effective than instruction in academic settings. Sixth, instruction for developmental purposes was more effective than for educational or (even more so) compliance purposes. To boil it down even further, they (Waples et al.) found that ethics instruction can have beneficial effects, mostly when it targets job specific skills and moral reasoning—and not often in academic settings—but it appears to have no beneficial effects on ethical behavior, though more research is needed on that question. Some recent research suggests that ethical behaviors can be encouraged through training. Warren et al. (2014) found that ethics training at work had a positive effect on ethical organizational culture, but the effects dissipate after 2 years. Warner et al. (2011) found that battlefield ethics training reduced unethical behavior in U.S. Army soldiers.

On the whole, that's a mixed bag. Yes, the evidence suggests that ethics courses can be effective, but the answer to the central question of whether they impact ethical behavior at work is either "no" or "not sure." Further, it looks like the university setting is not as effective as the workplace for ethics training. So how do we move forward in light of the growing (or at least continuing) problem of unethical behavior?

Let's first think about why people engage in unethical behaviors. The Kohlbergian approach suggests that ethics failures are a result of poorly developed moral reasoning among individuals. Therefore, we should help students develop their moral reasoning via education. Again, ethics courses with this focus do tend to improve students' moral reasoning (Waples et al., 2009). The use of ethics cases is one method commonly used to develop moral reasoning. Brenner and Molander (1977) devised some such ethics cases, one of which is provided below:

What would you do if the minister of a foreign nation where extraordinary payments to lubricate the decision-making machinery are common asks you for a \$200,000 consulting fee? In return, he promises special assistance in obtaining a \$100-million contract which would produce at least a \$5-million profit for your company. The contract would probably go to a foreign competitor if your company did not win it. (p. 57)

Another possibility is that people engage in unethical acts out of ignorance of relevant policies and laws. This view underlies the ethics-as-compliance approach in which students are *informed* of the relevant laws, procedures, policies, guidelines, and (in)appropriate behaviors. Standard I-O course content that addresses discrimination and adverse impact in selection, the ADA, sexual harassment, and so forth,

might fit into this approach. However, ethics courses may have only small effects on ethical awareness (Waples et al., 2009), so it's not clear how effective conventional approaches to teaching compliance have been. Plus employees may consider this approach to be intellectually shallow, manipulative and controlling, as memorably depicted in the ["Business Ethics" episode](#) of the TV show *The Office*.

As Andrew Fastow explains:

So, you could tell people to be ethical, have beautifully written statements about company values and all that, but you have a CFO who does a deal that's intentionally misleading to the outside world. You have to remember we hired the brightest, most ambitious young people, and they were smart enough to figure out what the CFO just did. And so, despite your corporate code of conduct and your code of ethics, those people saw that this guy became CFO, and he is incredibly misleading. So they decide, "I'm going to be misleading. I will be misleading to the people I work with and to my customers."

Research in social psychology suggests that there's a social component to unethical behavior (e.g., Kilduff & Galinsky, 2017). Anecdotally, many individuals who engage in unethical conduct do not at the time perceive their behaviors as unethical. One might attribute this to a lack of ethical awareness. However, an alternative interpretation is that such an awareness is fundamentally influenced by social factors such as the normalizing of unethical behaviors by in-group members (coworkers, managers, executives). Fastow notes: "I rationalized it by saying, 'This is how the game is played,' but it was really just a lack of character on my part."

Laboratory research by Dan Ariely (summarized in [Ariely's 2009 TED Talk](#)) suggests that everyone cheats a little, up to the point that cheating undermines our positive self-impressions. Thus, identity plays a role too. Perhaps our identities as psychologists make I-Os have a lower threshold for unacceptably unethical conduct. Maybe that's optimistic and out of line with prominent examples of psychologists who have acted unethically (e.g., [the APA and torture](#)). I think the focus in I-O psychology on ethical principles in human-subjects research is a good starting point for building an identity among our students that is centered on ethical conduct. Extending this idea, instead of merely trying to reduce ethics failures, perhaps we should seek to broaden the positive impact that I-O psychologists can have on the world. Gloss et al. (2017) argued for I-O psychology to reorient itself away from serving corporate interests and toward more humanistic concerns. Also worth reading are Gerard's (2017) response to Gloss et al., and my former colleague Joel Lefkowitz's (2017) book on ethics and values in I-O.

Fastow comments, "I think it was a bad corporate culture. People were incentivized to do the wrong things, and senior management, including myself, set very bad examples by the decisions we were making."

Ethics scandals can be understood using systems theory (e.g., Senge et al., 2019). In systems theory, unethical behavior is the product of the complex system comprised of the organization and the external environment in which it operates. For example, the power corruption cycle describes how leaders with a lot of power and little accountability develop an inflated view of their own importance, distance themselves from their employees, and elicit compliance, flattery, and submissive behaviors from their subordinates. As a result, they become insulated from critical information that leads them to believe that they are omnipotent, to make bad decisions, and often to engage in unethical behavior. The Enron case provides a fantastic example of these systems in action, as depicted in the 2005 Oscar-nominated

documentary, [Enron: The Smartest Guys in the Room](#). Or, if that's too long, assign to your students the [TRACE podcast](#) interview of Peter Elkind, one author of the book upon which the documentary is based. We can see this once again from Fastow:

I think of generic questions like, "If I own this company and I were leaving it to my grandchildren would I make this decision?" A simple question like that would have caught 99 percent of the fraud that went on at Enron, because the answer would have been "No."

If you found this brief summary of different ideas of how to teach ethics dissatisfying, so did I! There aren't nearly enough solutions or novel approaches described here, and I would love to hear more of them from you. How do you approach teaching ethics in your classrooms? Readers, please send me your comments, questions, and feedback. Loren.Naidoo@CSUN.edu

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The Bridge: Connecting Science and Practice

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“The Bridge: Connecting Science and Practice” is a *TIP* column that seeks to help facilitate additional learning and knowledge transfer to encourage sound, evidence-based practice. It can provide academics with an opportunity to discuss the potential and/or realized practical implications of their research as well as learn about cutting-edge practice issues or questions that could inform new research programs or studies. For practitioners, it provides opportunities to learn

about the latest research findings that could prompt new techniques, solutions, or services that would benefit the external client community. It also provides practitioners with an opportunity to highlight key practice issues, challenges, trends, and so forth that may benefit from additional research. In this issue, **Dr. Aimee Gardner** describes the integration of industrial-organizational psychology principles into the surgical residency selection process to address issues with efficiency, effectiveness, and fairness. Dr. Gardner also describes challenges that arose in bringing I-O to a new field and the strategies taken to overcome them.

Applying Selection Science to the Surgical Community

Aimee K. Gardner, PhD

Aimee Gardner, PhD, specializes in applying traditional industrial-organizational (I-O) psychology principles related to training and development, assessment, and selection to the healthcare field. Her work has been published in over 100 peer-reviewed articles and book chapters. Since completing graduate school (University of Akron, 2013), she has held roles in medical simulation centers, clinical departments, and currently serves as an assistant dean at Baylor College of Medicine in Houston, Texas.



While serving in these roles, Gardner quickly observed a significant gap between the research base and professional guidelines developed within I-O psychology and healthcare selection. Although applying the science of selection is important to optimize the efficiency and effectiveness of any organization, this integration is even more critical in high-stakes industries like healthcare. These gaps are concerning not only because healthcare-hiring organizations may be spending valuable time and resources on ineffective selection systems but also because healthcare is a field in which placing the wrong person in the job can have a widespread impact on patient care, clinical outcomes, and society at large.

To bridge these gaps and spread knowledge of I-O science to the medical education community, Gardner joined forces with a practicing surgeon in 2016 and founded SurgWise Consulting, a boutique, interdisciplinary consulting firm that specializes in integrating I-O research and principles into the selection

and assessment of surgeons. SurgWise helps hospitals implement more evidence-based selection techniques for identifying those best fit for a career in surgery through multimethod competency modeling, deployment of customized screening assessments, and incorporation of structured interviews.

What's the Problem?

Each year, over 65,000 medical students apply for a residency position in the United States (AAMC, 2018). Residency training is a necessary step for the newly minted MDs to receive focused training in the field of their choosing (pediatrics, dermatology, surgery, etc.) and be able to obtain board certification to practice independently within their specialty. A substantial number of residents then go on to another level of specialty training through fellowships. For example, 80% of general surgery residents continue on to fellowship programs, gaining more focused experience in areas such as pediatric surgery, cardiovascular surgery, and critical care (Lewis & Klingensmith, 2012). Unfortunately, these transitions from medical school to residency and from residency to fellowship can be a substantial headache for both the hiring hospitals and the organizations themselves. Below we describe some of the outcomes and areas of opportunity with the current selection processes in regard to efficiency, effectiveness, and fairness.

Efficiency

For the majority of medical specialties, there are substantially more applicants than positions available, leading applicants to apply to a wide array of programs across the country to increase their chances of securing a position within their specialty of choice. For many competitive specialties, such as surgery, this means that applicants are applying to over 50 different programs across the United States (AAMC, 2018). Unfortunately, that high volume creates a substantial burden on the hiring programs themselves. For example, surgery residency programs receive an average of around 800 applications to fill just five positions each year (AAMC, 2018). Although the application packets consist of traditional materials, such as medical-school grade point average, personal statements, letters of recommendation, and performance on national licensing examinations, the majority of decision makers agree that these data are not helpful in identifying those best-fit candidates for a rigorous, lengthy, and demanding career in surgery. However, without other usable information to filter the large volume of applications down to a more manageable size, program directors will apply a numeric cutoff of their choice to the one common metric across all applicants (licensing-examination scores), will manually review the remaining paper files for favorable letters and convincing personal statements, and will invite a number of the remaining candidates (often 100+) for on-site interviews (NRMP, 2018). Surgeons within each hospital will then close clinics, cancel their operating room schedule, and pause their other responsibilities to spend time with each candidate when they come on site for hospital tours and one-on-one interviews, 95% of which are unstructured (Kim et al., 2016).

As you might imagine, this process can be substantially burdensome for both the candidates and the clinicians themselves, along with those patients who are on the receiving end of delayed appointments and potential cancellations. It is estimated that medical students applying to surgery spend up to \$12,000 on the application process and travel to attend up to 20 on-site interviews, missing weeks of their final year of medical training (AAMC, 2015). In other specialties, such as ophthalmology, that number reaches up to \$20,000 per applicant! The hiring hospitals also take on a significant financial burden during this selection process. We recently partnered with a national surgical society to put a cost on the average amount of time and resources each program spends on the screening-and-selection process each year. We found that the average surgery residency program, seeking to fill just five positions, conservatively spends an average of \$100,000 each year trying to identify those best-fit candidates (Gardner

et al., 2019). Extrapolated to the ~280 programs going through this process each year, the specialty as a whole is spending around \$6 billion dollars each year trying to identify which applicants will make the best surgeons.

Effectiveness

Likely not surprising to anyone with a background in I-O, the ability for a lot of these screening tools and processes to predict later performance as a surgeon in training or practice is quite weak. Researchers have tried to tie application packet materials and interview ratings to a wide array of performance outcomes relevant to surgeons—such as performance in the clinic, procedural performance, awards received, patient satisfaction, need for remediation, and performance on later board certification examinations—but to no avail (Fryer et al., 2012; Mainthia et al., 2014; Stohl et al., 2010; Sutton et al., 2014). Perhaps even more concerning is the inability to identify who will even complete training and have long-lasting careers as surgeons. Surgery is a specialty with especially high attrition, with around one-third of all trainees leaving the program, many of whom exit within the first year or 2 (Yeo et al., 2017). For those who do complete training, around 30% require at least one formal intervention to remediate non-technical skills such as professionalism and interpersonal skills (Yaghoubian et al., 2012). In sum, there is ample opportunity to identify and implement tools and processes that will help these organizations identify those who will meet the demands and thrive in a career in surgery.

Fairness

Surgery is a profession that has traditionally been dominated by White men. Only recently have national campaigns been developed to draw attention to the racial and gender disparities present within the profession as a first step in ameliorating them. Unfortunately, it is unlikely that these efforts will fully take off until the current pipeline is rid of structural biases and inequitable screening practices. For example, the United States Medical Licensing Examination (USMLE) has been identified as a substantial barrier for entry into medical practice for underrepresented groups (Edmond et al., 2001; Rubright et al., 2019). Despite the paucity of data linking examination performance to later performance in training or practice (McGaghie et al., 2011), and the test developers' recommendations that it not be used for selection (Katsufakis & Chaudhry, 2019; Prober et al., 2016), the score on this examination is cited as the most important factor in identifying whose application will be further reviewed by hiring organizations. Other influential application information, such as letters of recommendation, have been criticized for their gender bias and favoritism of those applicants with an "insider status" and connections with those influential surgeons in the field (Higgins, 2017; Turrentine et al., 2019). Finally, reliance on unstructured interviews has created a screening process that applicants must strategically navigate, with recent data indicating that over 80% of all applicants to surgery receive at least one inappropriate or illegal interview question (Hern et al., 2016).

The Birth of SurgWise

The fact that surgeons are spending hours away from their patients and families to meet one on one with hundreds of candidates, are relying upon screening tools with little validity for predicting future performance, and are simultaneously trusting unstructured processes susceptible to bias—while also trying to increase the diversity of the workforce—is likely striking for both researchers and practitioners within I-O. After discussing these issues with physician friends at other institutions, I quickly learned that I was not the only one exasperated with the current process. Although it was rare to find someone who was familiar with the field of I-O and how it could contribute, my colleagues across the country were

eager to find a better way to find those best fit for a physician role in their hospital, and they were up for experimentation. Through these conversations, I learned about a wide array of new “techniques” being implemented to help programs identify those best-fit candidates for surgery careers, including requiring applicants to play the game of Operation® to demonstrate their stress management skills, arm wrestle an interviewing surgeon to test their hand strength, and put together Potato Head “families” to assess attention to detail. Thus, it was clear that there was at least a small proportion of programs across the country willing to “experiment” by integrating the science of I-O into their selection system.

However, I knew that to be successful in any effort to revamp the selection process, I would have to be strategic. The surgeon community is not always keen on “outsiders” entering their space and telling them how things should be done; they are much more likely to listen to a colleague with whom they have shared experiences. Fortunately, around this time I was working on a number of research projects with a nationally known and well-respected surgeon who had also expressed significant pain selecting the right candidates for his own program. After discussing some of the pain points with him and informing him about a field called I-O psychology that can help provide some guidance on these issues, we decided to partner up and pilot a more evidence-based selection process at his institution. We were delighted to observe a number of benefits (increased efficiency, less bias, selection of more diverse candidates, etc.) after just the first year of implementation—so much so that we agreed that there were a number of other organizations across the country that could benefit, and that we should formalize our partnership and processes even further through the development of SurgWise.

Lessons Learned and Additional Opportunities

Integrating I-O into a new field has brought with it a whole host of lessons learned and opportunities for further research and practice. The table below provides just a sample of many of the challenges we have experienced over the past few years, along with our attempts to overcome them through strategic partnerships, communication strategies, education, and research.

Challenge	How we have attempted to overcome them
Achieving buy-in as an “outsider”	<ul style="list-style-type: none"> ▪ Enlisted surgeon as cofounder to help represent company and “sell” I-O techniques ▪ Including personal “pain” stories in communications with potential clients ▪ Have our clients present their success stories independent of us ▪ Strategically partnering with influential organizations and societies within the profession
Data outside the industry are not convincing	<ul style="list-style-type: none"> ▪ Replicating well-established I-O studies within the medical field ▪ Presenting and publishing at national meetings and in professional journals in the medical field ▪ Bringing in data from other respected high-stakes industries (military, aviation)
Even with a high applicant-to-hire ratio, programs are very fearful a new process will “scare away the good ones”	<ul style="list-style-type: none"> ▪ Collect test-abandonment and applicant drop-out rates ▪ Provide reports of characteristics of those who choose not to participate in the selection system ▪ Incorporate applicant participation metrics into consulting contracts

Little fear of litigation	<ul style="list-style-type: none"> ▪ Provide education on the various points throughout the selection system that could be scrutinized ▪ Emphasize societal and ethical issues with implementing unequitable selection processes ▪ Tying legal responsibility within selection to other well-understood legal concepts (medical litigation)
Significant reliance on intuition and experience in making selection decisions	<ul style="list-style-type: none"> ▪ Review and organize historical selection documentation to identify prior remediation and attrition data ▪ Performing case studies with the client to identify impact of traditional versus new selection system ▪ Incorporate standardized training programs to highlight impact of relying solely upon intuition or instinct ▪ Connect clients with independent I-O researchers to explore historical patterns such as stereotypicality, bias in letters of recommendation, etc.

Acknowledging these obstacles, we have had many wins and success stories throughout this process. Thus far, around 70-80% of all applicants to surgery training programs complete at least one of our assessments. Because of this reach, and our mission to create more evidence-based and equitable pathways for entry into the profession, we have been able to move the needle forward in helping the profession reach its workforce diversity goals (Gardner et al., 2019). By de-emphasizing reliance on screening tools and practices that we know can systematically disadvantage individuals from underrepresented groups, and instead relying on tools with a strong evidence base and that meet professional guidelines, we have been able to enhance the diversity of the field in just a few short years (Gardner et al., 2019). Even more, we have helped organizations cut down on the number of interviews they conduct, giving their surgeons more time to spend taking care of patients, working on their academic pursuits, and spending time on activities that help them achieve their work–life integration goals.

Fortunately, there is a lot more to be learned within this industry, and it is ripe for research. For example, the centralized application and selection process for all candidates pursuing this career pathway means that we can study the same population of applicants to multiple organizations, assessing an array of application behaviors such as response consistency, faking, and drop-out tendencies. Furthermore, the multi-dimensional nature of surgeon performance means that there is a wide array of outcomes to explore in measuring the effectiveness of a selection system, such as procedural performance, licensing-examination performance, patient care scores, and numerous nontechnical competencies. Finally, as all programs within a given specialty are required to provide similar performance data of those selected, we can review uniform performance metrics across numerous organizations and follow the performance of the “lost tribe”—those who were rejected by one organization but selected into another across the country.

Conclusion

In sum, it has been very rewarding (and a lot of fun!) to help a high-stakes industry solve some of their talent management issues through integration of I-O science and principles. The complexities of the healthcare training-and-hiring system present exciting opportunities for I-O researchers and practitioners alike.

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R We There Yet? A Graduate Student Guide to Adopting R

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The modern workplace is more data driven than ever before. Big data, artificial intelligence, and analytics are all buzzwords pervading [academic](#) and [practitioner](#) conversations. In 2020, *artificial intelligence and machine learning* landed the top spot on [SIOP's list of Top 10 Workplace Trends](#). Every year, organizations collect seemingly infinite amounts of data on employees, customers, and marketplaces. These data are then translated into insights that serve as the foundation for decision making. Of all business functions, HR is cited as the one that has [embraced, benefited from, and transformed](#) most in the age of big data and advanced analytics. The demand for people analysts, [artificial intelligence specialists, and data scientists](#) in HR departments has grown commensurate with this trend.

Despite the promise of harnessing big data in HR to improve the bottom line, organizations appear uncertain about *who* should be working with people data and *what* software should be used to analyze them. Evidence of this can be found in job postings for people analysts, which lack consistency in the specification of “qualified” candidates in terms of educational background (e.g., PhDs in computer science vs. I-O psychology) and preferred statistical software proficiency (e.g., R, Python, SPSS, Tableau). To remain competitive in a global job market where the niche work of I-O psychologists (e.g., employment testing) is threatened by advances in big data analytics, experts call on I-O graduate programs to [modernize their curriculum by incorporating data science](#), citing computer programming skills as being an “absolutely necessary” competency for graduating I-O psychologists:

Skills in programming languages such as Python and SQL (Structured Query Language) will be essential for someone who has to create, access, manage, and/or analyze big data... Although it is unreasonable to fold these specific programming skills into already full statistics courses, perhaps some general programming skills can be incorporated by changing the kinds of statistical software used in these courses. For example, instead of using statistical programs with drop down menus (e.g., SPSS) in our courses, computer programming logic could be introduced by teaching statistics using R. (Aiken & Hanges, 2015, p. 540)

Echoing these authors, we believe that [learning R is a great starting point](#) for students looking to develop their computer programming skills and is an undertaking that provides a serious return on your investment. However, learning R should not just be a priority for practitioner-focused I-O graduate students nor is it just about big data analytics. With scientific research moving toward open practices, aspiring academics will equally benefit from investing time in learning R's open-source computer language. The “[New Statistics](#)” paradigm, endorsed by the *American Statistician*, speaks to the utility of using open-source software to promote [open science](#), as it allows the sharing of datasets, research-software source code, and other processes and products of research.

Our goal for this article is to start a conversation about the current state of R-use (or lack thereof) for I-O graduate students. We will discuss how I-O trainees and graduate programs are navigating the field's transition to R and the barriers they may face when doing so. We also provide a list of resources to support students in their development as R users, highlighting the fact that one of the greatest benefits of R is the supportive community that comes along with it. Overall, we hope to establish the importance

of learning new technology like R to help students prepare for future success in whatever career they ultimately pursue.

R Is the Best Response to Big Data in I-O Graduate Training

There is no shortage of Internet articles and references explaining the many benefits associated with using R. But we would be remiss not to briefly discuss some of them here.

One of the best things about R is that it is 100% FREE. This allows you to take R with you wherever you go, which can be particularly helpful if your university/organization is unwilling or unable to pay for an expensive licensed statistical program. R is an extremely powerful tool that can be used for statistical analysis and data visualization. It allows you to complete all of your data-related activities in one place and [makes creating formatted tables and figures easy](#). Another major benefit of R is that it is open source, enabling programmers to make regular updates, create new packages, and add new features for users. This ensures that R is always up to date and includes all the statistical tools you could ever need. As an open-source tool, R has given rise to a strong community among its user base. The R community does an incredible job of sharing useful information with fellow users, such as detailed tutorials for using a new package and helping to troubleshoot any problems that arise with an analysis. This is extremely helpful for both novice and well-seasoned R users. R makes it easy to share data and syntax for analyses, which makes the research process more transparent from start to finish. But don't just take our word for it—there are many others in the field who can echo these sentiments, so we asked one of the experts!

When asked to provide an “elevator pitch” for graduate students considering adopting R, [Dr. Cort Rudolph](#), associate professor of I-O psychology at Saint Louis University, said the following:

R is an in-demand skill: Universities want people who can teach statistics and methods classes in R, and companies want people who are likewise competent in R. Simply put, R is how people *do* statistics in 2020. R is the *lingua franca* of statistical computing and should be adopted as everyone's primary language, as such. As a field, we are moving toward a more open science view of research, which will eventually require you to not only share your results but also the data and code that led to such results. Because data and analysis code are packaged together, R facilitates the adoption of such open science practices directly in this way. Because it requires you to write down each step of your analysis workflow, R is a key tool for facilitating reproducible analyses. If you are trying to sell the idea of adopting R to your administration, remind them that all of these advantages are free!

If “R is the way we *do* statistics in 2020,” why is it not the statistical software of choice for *all* I-O psychologists? Specifically, we want to take an in-depth look at why R has not been consistently adopted by graduate students.

Understanding the Problem

Although the advantages of using R are often reported, it would be naïve to expect graduate students to learn and exclusively adopt R without first overcoming some barriers. Like the benefits, these barriers are wide ranging. We leverage the [Technology Acceptance Model \(TAM\)](#) to better understand the acceptance and use of R. Research on technology acceptance provides a useful framework for understanding how and why graduate students make the decision to use R in their coursework, research, and applied consulting projects. According to the TAM, two major beliefs determine whether someone will adopt and persist in using a new technology.

1. **Perceived usefulness:** the extent to which a person believes that using a technology will enhance their performance.
2. **Perceived ease of use:** the extent to which a person believes that using a technology will be free of effort.

In the context of these beliefs, with a focus on perceptions surrounding ease of use, it is clear why graduate students have not unanimously accepted R as their statistics software of choice. Describing the process of learning R as “free of effort” would be met with laughter in a room full of graduate students given R’s reputation of having a [steep learning curve](#).

If asked, “How beneficial will R be once you start using it?” many students contemplating the switch to R would enthusiastically respond “very beneficial,” excited by the promise of a one-stop shop software capable of managing advanced analytics and data visualization (e.g., trading in Mplus for *lavaan*, HLM for *lme4* and *multilevel*, SPSS for *psych* and base R, and Excel for *dplyr*). But, if asked, “How difficult will it be for you to learn to use R properly?” the resounding response would be far less enthusiastic, met with a begrudging, “extremely difficult and I don’t have the time to learn R.” From the perspective of the prototypical “[overworked and underpaid](#)” graduate student, the anticipated benefits of using R do not outweigh the [considerable amount of time and energy required to learn R’s programming language](#). Due to this barrier, we tend not to prioritize investing effort in learning R until it becomes mission critical to achieving an immediate goal (e.g., you can only run a specific type of analysis in R, your internship company does not pay for statistical software).

Why is it that we avoid learning how to use R until we are given no other choice? With comfortable point-and-click alternatives readily available to graduate students, learning R seems voluntary. You may ask, “If I have a statistical software that can already do the job, why would I spend all of that time learning R with everything else on my plate?” The reality is that for-pay statistical software may not always be available to you, especially in [corporate settings](#). With this foresight, you may consider proactively setting aside time in your schedule to learn R *now* to help your future self. The best way to make using R easier is to practice. The way we see it, the [flexibility, autonomy, and academic freedom](#) afforded in graduate school makes it the best time in your career to learn a new and marketable skill.

Overcoming the Barriers to Adoption and Use

Although beliefs about usefulness and ease of use play a central role in determining the adoption of new technology, they are [amenable to change](#). Experience using R may be the most direct route to changing these beliefs; however, a variety of other factors are likely to influence whether you decide to download and attempt to use R in the first place. A few factors that might affect whether a student chooses to adopt R include the following:

1. **Learning anxiety:** For many of us, the task of learning a completely new software can seem daunting and intimidating. Although exposure to coding languages is rapidly increasing, many students come into graduate school with prior experience using statistics software but little to no experience with coding. This can make learning R’s command-driven language comparable to learning a foreign language, making it very tempting to fall back to familiar point-and-click statistical programs (e.g., SPSS, SAS). However, the notion that learning R is more difficult

than learning other statistical packages may be overstated, evidenced by the fact that [users have been able to adapt to R just as well as they do with other statistical programs](#).

As with any new skill, learning R requires time, persistence, and self-discipline. At the onset of your R journey, you may feel frustrated by the sea of red error messages in your R console. We urge you to persevere and take comfort knowing that your anxiety will subside and the time you invest honing your R coding skills now will yield a return on investment following graduation. Like anything worthwhile, learning R is difficult. The next time your R syntax is met with a red error message, think twice about immediately defaulting to an alternative statistics program (we know the temptation is strong).

2. **Graduate program:** Decisions about learning R likely have a lot to do with whether it has been widely adopted in your graduate program. Although we were unable to obtain official statistics on how many programs formally require R in their statistics courses, intuition would lead us to believe that graduate students required to use R in their formal coursework would exclusively adopt R for their personal use (i.e., research and consulting) and would proclaim themselves as proficient in the software. However, the TAM tells us that these [institutional supports and social norms](#) are only a few of the various factors that influence technology adoption and use. Anecdotally, we know that I-O graduate students required to complete coursework in R do not all use it exclusively (or at all) outside of coursework and would not cite their proficiency as “advanced” or even “intermediate.”

When R is not required, it can be even more difficult to [devote the time](#) and motivate yourself to learn a new statistics program that may not seem instrumental to your immediate goals. Unfortunately, instituting R as the *go-to* software in I-O graduate programs, especially those not currently using R in their statistics curricula, is a big ask. Asking professors to redesign statistics courses to be taught in R can be a hard sell—especially at R1 universities where reward systems incentivize research over teaching—and presupposes their R proficiency is at a level that they can confidently redesign their statistics course(s) to be R based. Even some R-proficient faculty intentionally do not teach statistics courses in R because they are fearful of conflating teaching statistics with teaching computer programming. When formal pressures to learn R do not exist, it may be important to find other ways to motivate learning. Two effective sources could be advisors and peers. Advisors can be intentional about conveying the importance of R to their students and incorporate it into ongoing lab projects. Students can help each other by forming learning groups or agreeing to participate in online R-focused coursework together. Making a big change and proactively learning R can be difficult, so developing a support system around the behavior can enhance the outcomes for everyone involved.

To us, an internal locus of control is required of all I-O graduate students looking to learn and use R. Irrespective of whether your graduate program integrates R programming into its curriculum, graduate school is a long haul that affords ample time for skill development. You may have a head start if you received formal training in R, but you still need to put in the self-work to become proficient.

3. **Career goals:** Finally, it is important to mention that it may not be in everyone’s best interest to learn R. One of the best things about studying I-O psychology is that it gives students the opportunity to pursue a multitude of careers in various fields. With such a wide variety of pathways available for students, there are many jobs where having advanced statistical analysis

skills is unnecessary. It is easy to argue the many reasons why someone should learn R, but these only apply to careers where having advanced statistical analysis skills is of value.

We encourage you to use knowledge of these barriers to introspect about why you may be avoiding accepting and using R. What is stopping you? Does your graduate program not teach in R? Enroll in a [seminar](#) or find a community of aspiring R users in your department, [in your community](#), or [online](#). Are you too anxious about computer programming? Use RStudio and R Markdown, which offer a bit of *point-and-click*-like functionality to the process.

Even if learning R does not seem especially relevant to your goals now, we believe that having programming skills in R will only become more and more relevant as the field continues to innovate and evolve. By making your professional skill development an enduring priority, you are more likely to be competitive and to remain relevant in the age of human capital.

Did we convince you? Here are some steps you can take to begin your journey:

Step 1: Download R!

R is FREE! Go to <http://cran.r-project.org/> to download and install for your OS. R Studio is also FREE! Go to <https://www.rstudio.com/products/rstudio/download/#download> to download and install for your OS.

Step 2: Guided practice

Several online resources are available to learn R. We recommend the following:

- Dr. **Richard Landers'** complete course in R, "[Data Science for Social Scientists](#)." Modules 1–6 cover fundamental R programming and modules 7–9 cover traditional social-scientific statistical analyses and visualization. He offers readings, lecture videos and PPTs, and project assignments.
- Dr. Elizabeth Page-Gould's "[open materials](#)" for her advanced statistics graduate class at the University of Toronto. For each lecture, she offers R syntax and slides.
- Ben Stenhaus's [R/Rstudio/Tidyverse videos](#) and [Google Doc](#) that give the basic tools to do data science in R.
- Kiirsti Owen's R [advent calendaR](#), featured by the American Association for the Advancement of Science. Each of the 25 lessons takes 5 to 10 minutes and are designed to teach the basics of a data analysis and visualization in R.
- [R-bloggers](#) tutorials, such as how to [remove outliers](#).
- James Bartlett's list of [useful R resources](#).
- Dr. Charles Lanfear's full [online courses in R](#) at the University of Washington.
- Data Carpentry's workshop, "[R for Social Scientists](#)."

Step 3: Find a community of R users!

As with any new skill, it takes time to learn how to make things happen in R. It is our hope that this article not only provides you the motivation and resources to start learning R but also introduces you to community of people interested in learning R. There is an active Twitter community of R users, ranging from novices to experts. Join the conversation here:

[@LPineault](#)

[@ DaniBeck](#)

[@ thoughtsofaphd](#)

[@rnlanders](#)

[@jlnlanger](#)

*The content for this article was inspired by three e-interviews conducted with faculty and students of various levels of R proficiency. See attached PDF for full transcripts of these interviews. We thank Dr. **Cort Rudolph** of Saint Louis University, Dr. Robert Partridge of Wayne State University, and **Caitlyn Sendra**, MA of Wayne State University for their time and contribution.*

New Wage and Hour Legislation in 2020

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The labor and employment legal landscape is constantly evolving and staying up to date with the latest developments can be challenging. In this article, I highlight two areas where new legislation will have a significant impact on wage-and-hour compliance: (a) FLSA exemptions, and (b) independent contractor classification. For each topic, I'll highlight the new legislation and discuss anticipated implications for businesses and I-O psychologists.

FLSA Revisions Finally Take Effect in 2020

On January 1, 2020, revisions to the Fair Labor Standards Act (FLSA) took effect.¹ The revisions modify the criteria for employees to be classified as “exempt” from FLSA protections. Exempt employees are typically paid a fixed salary, regardless of the number of hours they work (salaried) whereas non-exempt employees are paid and based on the number of hours worked (hourly) and are entitled to overtime. The most notable revision for 2020 is an increase to the minimum salary an employee must be paid in order to qualify for the most common exemptions²—increasing from \$455 per week (\$23,660 per year) to \$684 per week (\$35,568 per year).³ The U.S. Department of Labor (DOL) estimates that 1.2 million U.S. workers will no longer qualify for an exemption and will have become eligible for overtime pay and other FLSA protections as a result of the change.

The final rule has a long history that I detailed in a prior *TIP* article.⁴ The change was initiated by President Obama in 2014⁵ and in response, the DOL developed and published a final rule in 2016, which would have set the minimum salary level to \$913 per week (\$47,476 per year). However, the 2016 rule was challenged and ultimately blocked by a federal court⁶ that reasoned, in part, that the proposed minimum salary in the 2016 rule was so high that it would supplant the analysis of the employees’ job duties, which Congress intended to be a critical component of the analysis of one’s exemption status. The new rule sets the salary threshold at a level that retains the importance of the job duties analysis.

The DOL’s estimate of 1.2 million impacted employees reflects the number of employees who exceed the \$455/week minimum salary under the old rule but do not meet the \$684/week minimum salary under the new rule. Without intervening action by their employers (e.g., increasing employees’ salaries), these employees will lose exemption status and gain overtime eligibility. The four industries expected to have the most employees impacted are (a) education and health services, (b) professional and business services, (c) financial activities, and (d) wholesale and retail trade. A large majority of these employees fall into two occupational groups: (a) management, business, and financial; and (b) professional and related. Almost all of these employees are from the private (for-profit) sector.

Implications

This legislation is expected to have two primary implications for I-O psychologists. First, the new rule sets the salary level such that the importance of one’s job duties is retained. Traditionally, this is where I-O psychologists have contributed to an evaluation of exemption status, either in a proactive audit or in

litigation as expert witnesses. As a result, I-O psychologists should continue to play a meaningful role in this area and be able to apply job analysis tools to help address significant legal questions.

Second, the impact of this rule for many organizations is that previously exempt employees will be reclassified as non-exempt employees. Reclassification often impacts a variety of internal systems that are relevant to I-O psychologists and HR professionals including staffing, labor budgets, scheduling, payroll, and timekeeping. When reclassification results in changes to employee job duties, a variety of additional systems are potentially impacted including selection, training, and performance management. Finally, there are unique legal risks associated with non-exempt employees including off-the-clock work and meal- and rest-break compliance. All of these potential changes are opportunities for I-O psychologists to help employers navigate these changes effectively.

Independent Contractor Classification

One of the hottest topics in wage-and-hour compliance in recent years has been the appropriate classification of workers as employees or as “independent contractors.” Workers classified as “independent contractors” are, by definition, self-employed and therefore not employees of the company for whom they perform work, meaning they are not protected by FLSA provisions (e.g., minimum wage, overtime) and do not receive employee-type benefits such as family and medical leave and unemployment compensation insurance. Misclassification also results in financial losses to the federal and state governments in the form of lower tax revenues and less contributions to unemployment insurance and workers’ compensation funds.⁷

The classification of workers as independent contractors has faced increased scrutiny in the past few years both federally and at the state level. Recently, the most movement on this issue has occurred at the state level. The most notable example of this effort occurred in the state of California, which passed legislation (AB5)⁸ that redefines the test to determine whether workers are legally classified as employees rather than independent contractors.⁹ This new test took effect in 2020.¹⁰ The test is referred to as the “ABC test” because it has three prongs. Under the new law, workers are presumed to be employees unless the organization can meet *all three* prongs:

- A. The worker is free from the control and direction of the hirer in relation to the performance of the work, both under the contract and in fact;
- B. The worker performs work that is outside the usual course of the hirer’s business; AND
- C. The worker is customarily engaged in an independently established trade, occupation, or business of the same nature as the work performed for the hirer.

This test is seen as considerably more stringent than prior tests and will most likely result in many independent contractors being converted to employees. The prior test in California, along with tests used federally, tended to focus on the degree of “control” the organization has over the worker. This is generally consistent with the “A” prong of the new test. What is widely considered to be the most challenging aspect of the new test is the “B” prong, that is, whether the work performed is “outside the usual course of the hire’s business.” The introduction of this criterion has the potential to drastically impact many companies, particularly in the gig economy. If an organization is unable to demonstrate that the work performed by an independent contractor is outside their usual course of business, they would need to reclassify the worker as an employee if they want to continue to hire that worker and remain compliant.

Though this specific legislation only applies to workers in California, this issue is not unique to the Golden State. New Jersey and Massachusetts both have a version of the ABC test for assessing employment status, and many other states use a version of the ABC test for other purposes such as unemployment compensation.¹¹ The trend has been towards stricter employment tests at the state level, so it's likely that other states will continue to adopt similar laws.

Implications

The issue is far from settled. Many of the largest companies in the gig economy have challenged the applicability of AB5 through legal action. In addition, Uber, Lyft, and Door Dash have banded together to submit a 2020 state ballot initiative that would alter the law.¹² Assuming that AB5 will continue to be enforced, it will likely result in a great deal of litigation over misclassified employees. Traditionally, I-O methods have been used to address the “A” prong of the new test, which often includes an analysis of the frequency of interaction between the worker and company, the nature of that interaction, the worker’s decision-making authority, and other related topics. However, the introduction of the “B” prong presents an opportunity for I-O to develop new and innovative methods or applications of existing methods to contribute to the analysis.

Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the opinions, position, or policy of Berkeley Research Group, LLC or its other employees and affiliates.

Notes

¹ U.S. Department of Labor (2019).

² The revisions apply to the Executive, Administrative, and Professional Exemptions, collectively known as the “White Collar” or “EAP” exemptions.

³ In addition to federal regulation, exemption status may also be impacted by state labor laws and regulations.

⁴ Hanvey (2018a).

⁵ Executive Office of the President (2014).

⁶ *Nevada v. U.S. Dept of Labor*, 275 F. Supp. 3d 795, 806 (E.D. Tex. 2017).

⁷ U.S. Department of Labor (2014).

⁸ See http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB5

⁹ There were, and continue to be, many different “tests” to determine employment status. For example, multiple federal agencies including the DOL and IRS have published criteria to determine employment status. Many states have their own criteria, and various court rulings also provide guidance on relevant criteria. See Hanvey (2018b) for a more detailed discussion.

¹⁰ AB5 was intended to codify the California Supreme Court ruling in *Dynamex Operations West, Inc. v. Superior Court of Los Angeles*, which first introduced the ABC test in California in 2018.

¹¹ Kappel (2018).

¹² Meyers (2019).

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SIOPI in Washington: 2019 Year in Review

Bill Ruch & Alex Alonso

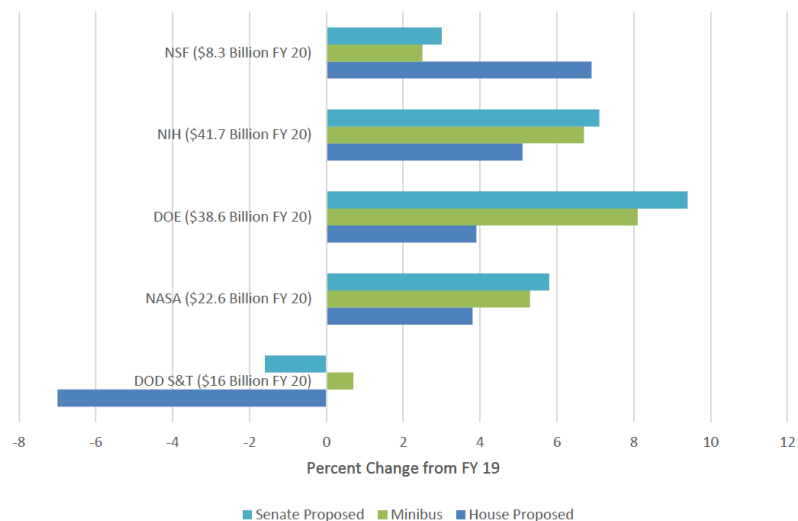
Since July 2013, SIOPI and Lewis-Burke Associates LLC have collaborated to make I-O science and research accessible to federal and congressional policy makers. SIOPI has embedded a foundational government relations infrastructure within the organization, enabling SIOPI to develop an authoritative voice as a stakeholder in science policy in Washington, D.C. and to promote SIOPI as a vital resource for evidence-based decision making.

2019 was a banner year for SIOPI advocacy as the Society was able to get our priorities included in more legislation and engage more members in advocacy than any other year! To commemorate these and other highlights, we've put together a year in review that provides a summary of key achievements and instructions for how to get involved in 2020. The infographic can be found on the SIOPI website [here](#).

Congress Passes FY 2020 Spending Bill

In late December, after months of negotiations, Congress passed the fiscal year (FY) 2020 appropriations spending package. FY 2020 appropriations would boost funding for all federal agencies that support research, and most science and technology research and development programs across the federal government would see significant increases. This action came after SIOPI joined over 160 universities, research institutes, and scientific societies to sign on to a letter to congressional leaders. The letter emphasized the importance of federal investment in research and development initiatives and warned of the adverse impact of uncertain funding on scientific progress. (*The complete letter can be found [here](#).*)

FY 2020 Minibus vs. FY 2019 Enacted



The graphic above shows final funding results for major research agencies. The biggest winners are the National Institutes of Health and the Department of Energy fundamental and applied energy research programs, with more modest increases for the National Science Foundation, Department of Defense science and technology programs, the National Aeronautics and Space Administration science program, and the U.S. Department of Agriculture's Agriculture and Food Research Initiative.

Moving into next year, FY 2021 funding levels are not likely to deviate substantially from final FY 2020 appropriations. The 2-year budget agreement provides only a \$5 billion increase to total discretionary spending in FY 2021—from the current level of \$1.37 trillion to \$1.375 trillion. In addition, completing FY 2021 appropriations and major legislation is often a challenge during a presidential election year. One or more continuing resolutions are likely ahead of and following the elections next November.

As usual, the president's FY 2021 budget request, released in February, called for across-the-board cuts to basic research agencies like NSF. In the months ahead, SIOB will continue to advocate for robust funding for NSF and social behavioral science funding writ large as Congress considers FY 2021 appropriations.

Additional information on the 2020 omnibus is available at <https://crsreports.congress.gov/AppropriationsStatusTable>.

New Social Science Programs Previewed at NSF

In December, Lewis-Burke attended the Advisory Committee for Social, Behavioral and Economic Sciences (SBE) meeting on behalf of SIOB. The committee makes recommendations for Assistant Director Arthur "Skip" Lupia, and the assistant director is provided the opportunity to forecast potential forthcoming strategies and opportunities for the directorate. SBE provides nearly 68% of the federal government's funding for the social and behavioral sciences. Lewis-Burke attends this meeting as a way to gather intelligence for I-O researchers on areas of interest.

Dr. Lupia is primarily looking for more cross-disciplinary partnerships between SBE and industry, as well as other federal agencies and NSF directorates, namely Computer and Information Science and Engineering (CISE). It is Dr. Lupia's belief that the social and behavioral sciences could contribute to these fields through use-inspired research in areas like ethics, human factors, trustworthiness, augmented intelligence, societal impacts, etc. To this end, Dr. Lupia has expressed interest in seeding new cross platform ideas that maintain basic research priorities of NSF but with a greater emphasis on broader impacts.

Specifically, Dr. Lupia has mentioned that he was looking into a few new programs. One focused on *strengthening american infrastructure*, which would support research on cyber and physical infrastructure that considers human elements on the front end of the design process, and another focused on improving trust across sectors, including cyber, electronic commerce, politics, and so on. Dr. Lupia also described an idea for new research pipelines/partnerships between top research universities and underserved institutions, such as minority serving institutions (MSIs), outlined below. **I-O researchers should consider this emerging focus on broader impacts and collaboration as they develop research proposals for SBE.**

Funding Opportunity: NSF Releases Dear Colleague Letter for Collaborations With Minority-Serving Institutions on Social, Behavioral and Economic Sciences

The National Science Foundation (NSF) Directorate for Social, Behavioral, and Economic Sciences (SBE) has released a Dear Colleague Letter (DCL), announcing the creation of a new program called Build & Broaden (B²) and calling for the submission of conference proposals to further examine the goals of the program. B² is one of a few highly anticipated new programs at SBE proposed by Dr. Lupia. The program fundamentally seeks innovative solutions to address the low numbers of competitive research proposals from minority-serving institutions (MSIs)¹ at SBE relative to other institutions. The DCL is specifically looking to build research capacity at MSIs by improving meaningful partnerships among MSIs and/or between MSIs and "R1" research institutions.

Proposals may address any SBE field, and collaborations must include at least one MSI. SBE intends to support up to 10 conferences, and proposers are strongly encouraged to host the conference on a campus of a partnering MSI. As noted in the DCL, in addition to being a priority for SBE, enhancing diversity and inclusion in research proposals is a major goal for NSF as a whole and was identified as a core value in the agency's 2018–2022 strategic plan. Applicants that can successfully demonstrate meaningful research partnerships with/among MSIs that bolster the strength of MSI research capacities could be more competitive for future awards at SBE as B² expands and in other programs throughout NSF. Responses to the DCL are due **May 1, 2020**. The Dear Colleague Letter can be found at <https://www.nsf.gov/pubs/2020/nsf20048/nsf20048.jsp>.

Future of Work Advocacy Continues and New Advocacy Areas Emerge

As previously reported, SIOP launched an advocacy area on the Technology-Enabled Workforce to provide member-driven support for advocacy for the consideration of evidence-based I-O psychology as policymakers address areas such as the impact of automation and new technologies on the workforce. In November, Lewis-Burke met with the House Education and Labor Committee staff who are looking to examine policy needs for tech-enabled workforce shifts through the *Workforce Innovation & Opportunity Act* (WIOA). WIOA authorizes a number of federal programs relating to workforce development, employment, and job training and is due to be reauthorized next year. Lewis-Burke is working closely with Government Relations and Advocacy Taskforce (SIOP GREAT Committee) to provide input on how SIOP expertise can be supportive in this space.

The SIOP GREAT Committee has also been working with Lewis-Burke to bolster new Advocacy Areas in health, education, and training; and defense and security. We will report emerging updates from these groups and their advocacy in future editions of this column.

SIOP Advocacy 101

For those interested in learning more about SIOP advocacy and how to leverage your personal advocacy in service of I-O psychology, we recommend attending SIOP 2020 in Austin, Texas. The Lewis-Burke team will be offering direct training to new advocacy area members and offering lessons learned during a session featuring SIOP GREAT Committee leaders Alex Alonso and **Kristin Saboe**—SIOP Advocacy 101: Making Your Voice Heard Where It Matters. This session will be held on Friday, April 24, 2020 @ 1:30pm in the JW Grand Salon 2. Don't be afraid to get involved during our upcoming annual meeting and make your voice heard.

For questions regarding SIOP advocacy, please feel free to contact Alex Alonso at alexander.alonso@shrm.org or Bill Ruch at bill@lewisburke.com.

Note

¹ MSIs include Hispanic-serving institutions; Alaska Native-serving institutions and Native Hawaiian-serving institutions; and predominantly Black institutions, Asian American and Native American Pacific Islander-serving institutions, and Native American-Serving nontribal institutions. Full requirements for MSIs are on the Department of Education website at <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

Hold the Date: October 15–17, 2020
Leading Edge: Leadership Development
Hilton Minneapolis
October 16–17, 2020
Workshops: October 15

Karen B. Paul, 3M
Chair of 2020 Leading Edge Consortium

According to the Conference Board (2020) C-Suite Challenge, talent is the number one stress point globally for CEOs with talent shortages acutely felt across all industrial sectors. The need for leadership development has never been more urgent. Companies of all sorts realize that to survive in today's environment, they need leadership skills and organizational capabilities different from those that helped them succeed in the past, and they need these skills at all levels. Yet, what these skills are and how best to develop leaders for a future that has yet to arrive is the subject of many debates in organizations, consulting firms, and academia. For these and other reasons, the SIOP 2020 Leading Edge Consortium (LEC) will focus on the topic of *Leading Edge: Leadership Development*.

Please hold the date, and join me and the SIOP LEC Design Team for this event:

- **David V. Day**, Claremont McKenna College
- **Gordon (Gordy) Curphy**, Curphy Consulting
- **Alexis Fink**, Facebook
- **Mike Benson**, General Mills
- **David B. Peterson**, Google
- **Allan Church**, Pepsico
- **Laura Mattimore**, Procter & Gamble

The 2018 Leading Edge Consortium: A SIOP Success for Practitioners

Rob Silzer

HR Assessment and Development, Inc./Baruch, Graduate Center CUNY

Editor's Note: I received this submission originally in August of 2019; the delay in its publication was my fault, not the author's.

One of the core programs that SIOP offers for practitioner members is the annual LEC. These have now been held every year for the last 15 years. This article reports on the LEC held in 2018 that focused on High Potential Leadership Talent. This is an effort to keep all SIOP members informed of the status and ongoing success of the LECs. Although the annual LECs now regularly attract over 200 participants, it is important that all SIOP members stay informed of our progress.

Over the last 15 years, the Professional Practice Committees have delivered 15 annual LECs (Leading Edge Consortia). The LECs were initiated to provide an important professional service to SIOP Practitioners.

The first LEC in 2005 focused on *Leadership at the Top: Selection, Globalization, and Ethics of Executive Talent*. It was held in St. Louis and produced exceptional results. We had a very strong program of expert speakers and 185 attendees. It resulted in net profit for SIOP (a great accomplishment for a first-year conference). That LEC received very high evaluation ratings from participants (they still are among the highest ratings across all of the LECs). As an LEC originator and co-chair of the 2005 LEC, along with **Leaetta Hough** and **David Campbell**, I can attest to the enormous amount of work it took to successfully deliver this first LEC. Dave Nershi, then the SIOP Executive Officer, was a full partner in helping this to be so successful.

Over the years the LEC had some ups and downs and even some financial losses in some years ([Silzer & Parson, 2014](#)). In 2012, **Doug Reynolds**, then SIOP president, appointed an LEC Advisory Group, chaired by me, to develop recommendations for saving the LEC (Silzer et al., 2012). The recommendations were fully accepted and implemented. This led to a true resurgence of the LEC in recent years.

Over the last 3 years as the SIOP Professional Practice Officer, I made a determined effort to ensure three successful LECs. Each year I chaired an annual LEC Topic Selection Committee that identified the LEC topic and the practitioner chairs. This includes:

- 2017 – *Innovations in Executive Coaching: Deepening Your Expertise in a Dynamic World*, Chair **Sandra Davis**
- 2018 – *High Potentials: Identifying, Developing and Retaining Future Leaders*, Chairs **Rob Silzer** and **Allan Church**
- 2019 – *Advancing the Edge: Assessment for the 2020s*, Chairs **John Scott** and **Doug Reynolds** (early indicators point to a highly successful LEC)

The 2018 LEC was held in Baltimore and chaired by **Rob Silzer** and **Allan Church**. Our highly committed LEC Organizing Committee included **David Baker**, **Karen Grabow**, **Raphael Prager**, **John Scott**, and **Lorraine Stomski**. We organized a 2-day program of 24 highly regarded topic experts, including practitioners, researchers, CHROs. and HR professionals. (See program agenda [here](#).)

We introduced several new innovations, such as:

- Holding the offsite welcome reception on the USS Constellation in the Baltimore Harbor
- Providing a preconference student briefing with leading speakers from the main program
- Expanding LEC partnership opportunities: Including HIP talks (High-Impact Presentations) by leading corporate CHRO and HR professionals
- Holding open Q & A sessions of speakers with participants
- Offering three preconference workshops that attracted 150 workshop attendees. (Workshops were also offered at the 2017 LEC on Executive Coaching.) The 2018 workshops were:

1. *Identifying and Assessing High Potential Leadership Talent*
Leaders - **John Scott, Rob Silzer, & Matt Paese**
2. *Developing Agile High-Potentials*
Leaders - **Jeff McHenry, Andrew Webster, Robin Cohen, & Lorraine Stomski**
3. *Building Integrated and Sustainable High-Potential Talent Management Programs*
Leaders - **Allan Church, Laura Mattimore, & Seymour Adler**

The results from the 2018 LEC include

- Over 200 participants
- Very positive responses to the new LEC innovations
- Strong LEC and program ratings by participants
- High attendance and strong ratings for two workshops
- A record level of partnership sponsorships (in both number and revenue)
- A record level of *net profit* for an LEC of \$73,000

The participant evaluations of the LEC were very positive.

- Participants agreed that high potential talent identification is an important leadership development topic in today's organizations (97% favorable)
- The Leading Edge Consortium was rated very positively by participants with the vast majority of evaluation items receiving 85% or higher favorability including:
 - The content of the consortium effectively covered the topic of identifying, developing, and retaining high potential future leaders.
 - The consortium content provided me with information that is applicable to my work.
 - I picked up new insights, practices, and approaches to the high potential topic from this consortium.
 - The consortium provided an environment conducive for networking with fellow professionals and speakers.
 - The speakers were very knowledgeable on the topic of identifying, developing, and retaining high potential future leaders.
 - Compared to other conferences I have attended, this was one of the best overall in terms of value.
- In addition, the LEC was rated very favorably for program facilitation, program schedule, program length, meeting rooms and facilities, food and beverage meals, breaks at the hotel, and the hotel accommodations

There were only two areas of disappointment. The location of Baltimore was not well regarded by participants, primarily due to local city problems and security concerns. We received emails from members who decided not to attend because of the location. Also, one of the workshops was not able to qualify for APA CEUs (continuing education credits). This may have limited the attendance.

Over the last 2 years of LEC (2017, 2018) a few things stand out as achievements:

- Both had very strong attendance of over 200 participants
- Each had 150 attendees at preconsortium workshops
- Each had high evaluation ratings from participants
- Each set records for LEC sponsorships
- The many new innovations were very well received
- They combined for a total of \$135,000 in *net profit* to SIOP.

Members might also be interested to know some related results for the 2019 Practitioner Needs Survey (see related article in this *TIP* issue)

- Of the 30+ programs developed and offered for practitioners by the Professional Practice Committees over the last 3 years, the LEC is rated as the *third most valuable program* for practitioners
- Of the 33 possible initiatives for practitioners that might be developed by the Professional Practice Committees in the future, an *Advanced Professional Development Program* is the second most wanted by practitioners.

So given the positive feedback, success metrics and high LEC participant ratings, we seem to be on the right track to provide LECs that meet the needs and interests of SIOP Practitioners. There is no doubt that under the leadership of **Tracy Kantrowitz** (the new SIOP Professional Practice Officer) and the four Professional Practice Committees, these services to practitioners will continue to be offered and expanded. Look for forthcoming program announcements.

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Factors in the Transition of Career Military Personnel to the Civilian Workforce

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Abstract: Veterans transitioning to the civilian workforce face many challenges. Yearly, approximately 18,000 veterans reenter civilian life, which includes transitioning into a second career, facing issues of life satisfaction, and encountering differences in military versus civilian work structures. Data on veterans indicates continued struggles in securing civilian employment commensurate with their skills. In this study (N = 146), the predictors of a successful transition from the military to the civilian workforce were analyzed. Demographic data and scores on standardized measurements were computed. Regression analyses yielded results of life satisfaction alone ($< .05$) and life satisfaction with race-ethnicity ($< .01$) as strong predictors for securing employment. Age alone and age combined with the number of years of military service, workability, and social capital were found to be strong predictors ($< .01$) of being employed. Although satisfaction with life increases the likelihood of a successful transition from military service to civilian work, social capital indicates that support is required to bolster one's personal assessments of self-worth, skills, and ability to work because self-identity does alter self-perceptions (Amiot et al., 2015). Though little can be done to change demographic predictors, such as race-ethnicity, age, and length of service (number of years in the military), initiatives can be designed to strengthen dispositional factors, such as life satisfaction, workability, and social capital. It is recommended that initiatives be explored specifically targeted to such factors. Practical implications of the results are discussed.

Keywords: Veteran transition, predictors, veterans, employment

Reintegration of post-military personnel, veterans, into the civilian workforce after separation (expiration of term of service [ETS]) or retirement often involves transitioning into a post-military career (Anderson, 2015; Wanberg et al., 2015; Zogas, 2017). Even when officially retiring from the military, many veterans wish to or have the financial need to remain in the workforce in order to supplement their retirement, and even to explore new avenues of personal growth, including education, repurposing of skills, and application of the knowledge gained while in the military.

Veterans go through these transitions regardless of age, race-ethnicity, gender, or physical condition (Anderson, 2015; Wanberg et al., 2015; Zogas, 2017). These transitions result in changes in relationships, roles, routines, and expectations. They vary in quality and success based on factors such as the situation, self, support, and strategies (Ryan et al., 2011; Schlossberg, 1981; Zogas, 2017). Military transitions at ETS involve each factor as well as expectations, such as different definitions of work success and alternative strategies for succeeding at work (Koenig et al., 2014; Ryan et al., 2011; Vigoda-Gadot et al., 2010; Zogas, 2017).

Veterans' transitions mimic those of civilians moving into second or alternative careers, with the additional stresses generated by the limited understanding of military roles by civilian employers and, in some instances, the veteran's requirement of not discussing past roles and operational involvement based on level of authorized security clearance (Amiot et al., 2015; Barclay et al., 2011; Cabrera, 2007; Inkson et al., 2012; Kang & Gottfredson, 2015; Linnabery et al., 2014; Nilsson & Ekberg, 2013; Viotti et al., 2017). As in civilian employment, changes and successful occupational placement or reintegration depends on factors related to individual differences and individual motivations (Amiot et al., 2015; Forrier et al., 2015; Grimland et al., 2012; Jaensch et al., 2015; Kordbacheh et al., 2014; Vigoda-Gadot et al., 2010; Zacher, 2014; Zogas, 2017). Reintegration into the civilian workforce has affected each generation of veterans on ETS or retirement (De Groat & Crowley, 2013; Schmidt et al., 2013; Weaver, 2013; Zogas, 2017). Politics, social and economic circumstances, societal perceptions of veterans, resources available for the occupational training of veterans, employment opportunities, life satisfaction, and age (equated to a level of maturity) influence the reintegration process (Daywalt, 2014; Greengard, 2012; U.S. Department of Labor, 2011; Zogas, 2017).

In an effort to assist veterans in the reintegration process, the Serviceman's Readjustment Act of 1944, or GI Bill, was introduced and, as an expansion of the GI Bill, the post 9/11 GI Bill took effect in 2009 (Zhang, 2018); veterans can use either. Whichever GI Bill is selected it assists veterans with going to college or trade school, resulting in nearly 49% entering college within 3 years of their ETS (Greengard, 2012; Zhang, 2018). Additionally, in a "pooled sample from 2005 to 2015... On average, veterans have a higher college enrollment rate (22%) than nonveterans (12%)" (Zhang, 2018, p. 89).

Though the GI Bill assistance is helpful and comes with an allowance (Zhang, 2018), it does not cover other expenses, such as maintaining a family and the quality of life, as well as finances, they may have enjoyed while in the military. This, in addition to other factors such as declines in high paying blue-collar positions requiring no college degree and employers' potential differential treatment, based on prejudice, of veterans, puts veterans at a disadvantage in securing employment or being employed in comparison to their civilian counterparts, further reducing the veterans' self-esteem and self-efficacy (Bureau of Labor Statistics, 2017; Daywalt, 2014; De Groat & Crowley, 2013; Greengard, 2012).

Over 18,000 military-trained individuals reenter civilian life annually (Gates et al., 2013; Globalsecurity.org, 2017). Many military personnel have limited civilian work experience, having chosen the military after high school education (or a General Education Diploma), whereas others are not ready for full retirement (BLS, 2017; Cohen et al., 2013; Daywalt, 2014; Gates et al., 2013; Greengard, 2012; U.S. Department of Labor, 2011; Zogas, 2017). As they transition to civilian work, they are challenged with greater unemployment rates than for the general population (BLS, 2017; Daywalt, 2014; De Groat & Crowley, 2013; Griswold & Ellis, 2012; Greengard, 2012; Kuen et al., 2013). In addition, they face losses of social networks, differences in organizational structures (flat versus hierarchical), dissimilar communication styles and cultures (civilian vs. military), changes in geographic location, as well as attempts at self-redefining while finding significance in new roles (De Groat & Crowley, 2013; Kukla et al., 2015; Schmidt et al., 2013; Zogas, 2017). These individuals enter civilian life with varying degrees of preparation and resilience (De Groat & Crowley, 2013; Kukla et al., 2015; Schmidt et al., 2013; Seligman, 2011;

Zogas, 2017). Thus, work-related (such as preparation for retirement, resilience, self-esteem, satisfaction with life, emotional intelligence [EQ], cultural intelligence, self-efficacy, work ability, job satisfaction, social capital) and demographic (such as age, gender, race-ethnicity, number of years of military service, number of deployments, highest level of education, financial responsibility for others, how long to secure employment after ETS, how long in current employment) variables and labor-market and economic conditions, in combination, play a role in the transition yet are infrequently identified and studied as challenges of transition to civilian life in the veteran population or by those who seek to assist them as struggles in their adjustment (Hees et al., 2012; Schaefer et al., 2013; Van Til et al., 2013; Vigoda-Gadot et al., 2010; Wilson, 2014; Zogas, 2017).

Challenges of Military-Career Transition to Civilian Life

Cultural/organizational differences between the military, hierarchical, structure and civilian, matrix, organizations leave veterans struggling with person–organization fit. Although common to civilian populations, these differences between the military and the civilian work environment (industry) increase the dissonance in person–organization fit (Zogas, 2017). Matrix structures that are characterized by reporting to more than one superior (e.g., in a managing team) in civilian work environments may become a challenge when compared to the previous hierarchical structure experienced by military personnel, where reporting is through the chain of command and is responsive to mission requirements. Adaptation to these differences requires flexibility, leadership, and emotional buy-in, whereas civilians do not go through this type of adaptation because they are not accustomed to the military organizational culture (De Groat & Crowley, 2013; Schmidt et al., 2013; Zogas, 2017). Being able to adapt including securing employment and then being employed influences veterans' reintegration process and is challenged by personal as well as cultural/organizational and physical- and mental-health factors often operationally defined through the work related and demographic variables noted previously, which can influence the fit and transition of military to civilian skills (Amiot et al., 2015; Daywalt, 2014; De Groat & Crowley, 2013; Kukla et al., 2015; Weaver, 2013; Zogas, 2017). Each of these variables impacts self-evaluations (self-esteem and self-efficacy), expectation of a financial responsibility for others, and workability (Forrier et al., 2015; Johnston et al., 2010; Nilsson & Ekberg, 2013; Wilson, 2014; Vigoda-Gadot et al., 2010). These challenges are also highlighted in qualitative studies as reintegrating veterans voice their frustration and concern, even when welcomed and supported by the GI Bill and other programs (Greer, 2013; Griswold & Ellis, 2012; Hees et al., 2012; Schaefer et al., 2013). Dunstan and MacEachen (2013) echo these concerns with civilian populations returning to the workforce after an extended absence.

In a 2014 examination of military-personnel reintegration, Wilson found continued qualitative evidence for the need to improve assessments of dispositional factors in veterans (e.g., resilience, self-esteem, satisfaction with life, EQ, cultural intelligence, self-efficacy, work ability, job satisfaction, social capital) in academic institutions focusing on bridging and supporting veterans in premilitary and postmilitary skill sets. These issues are also addressed in civilian literature; for instance, Griswold and Ellis (2012) examined statistical data of unemployed U.S. workers, determining that unemployment and its associated costs mirror the economic strains (personal-dispositional and national) of the U.S. Department of Labor (2011) study focusing on military separation.

Despite the historical and qualitative data, there is a dearth of quantitative information that systematically presents the veteran transition to the civilian workforce. Rather, the information yielded in single qualitative studies has been used to develop programs focusing on resilience and job-search skills, without broader evidence of specific factors affecting the veteran's successful transition to the civilian workforce (Daywalt, 2014; Weaver, 2013; Wilson, 2014). Allen and colleagues (2012) noted that reintegration

programs are challenged in bridging the gap between veteran skills and employer understanding of equivalent skills in civilian positions. The resulting prolonged difficulties of finding work strain the conscientious individual with a steady duty record and varied deployments, generating further loss of self-worth and self-efficacy (Amiot et al., 2015; Anusic & Schimmack, 2016); hence, the need for an integrated framework and to identify predictive factors in this transition.

Broad theoretical frameworks of career development exist, and further targeted quantitative research is needed in the populations they aim to assist (for example, military veterans transitioning to the civilian workforce). In 2002, Feldman developed the life development theory, stating that early experiences in life reinforce and lead to self-selection of future opportunities in education and employment. The result is that individuals spend their lifetimes developing and augmenting each career move, influenced by preceding lifetime experiences inclusive of career, skills, and past training.

Though the life development theory does not have sufficient empirical support, more research, primarily with women, has been conducted on the kaleidoscope career model (KCM; Mainiero & Sullivan, 2006). The KCM suggests that women, and by extension men, evaluate three dimensions when considering a career or a career move. Individuals evaluate dimensions of authenticity, balance, and challenge. It is suggested, with some empirical support, that these dimensions shift throughout life, similar to the changes of a kaleidoscope when turned, altering whether an individual desires a high-challenge or risk-driven position where financial recompense would be high, or would prefer a low financial reward to obtain work-life balance, allowing for family and other interests while remaining actively employed. The final dimension, authenticity, pertains to one's value alignment with the employing organization (Cabrera, 2007; Mainiero & Sullivan, 2006; Sullivan et al., 2009).

Another theory, the boundaryless career, developed by Arthur and Rousseau (1996), has received the most empirical focus with its close ties to the protean career model of Hall (2004), though the focus of research for both models has been on the protean personality. Protean careers depend on individual's personality (dispositional factors) and the focus or drive to make a change while supported by the behaviors to make the change happen (Briscoe et al., 2006). The boundaryless career, like the protean career, focuses on the individual responding independently to organizational change and re-imagining the career as lateral rather than hierarchical (Arthur & Rousseau, 1996). Each model has extensive empirical work focused on the development of measurement scales but limited on its applicability to committed job seekers or second-/later-career individuals (Baruch, 2014; Briscoe et al., 2006; De Bruin & Buchner, 2010; Eby et al., 2003; Enache et al., 2008; Grimland et al., 2012; Volmer & Spurk, 2011).

In 2013 Wang and colleagues took these and additional theoretical models, and attempted to present an integrated perspective. The findings included the challenges present in the combination of models used by practitioners. It was concluded that there is no single, cohesive, broadly accepted model of second careers or mid- to late-career development.

Forrier and colleagues (2015) presents the most recent attempt at an integrated understanding of second careers or mid- to late-career development. This attempt focuses on the transition experience or movement capital, summarized as human capital or self-efficacy, social capital or career networks, adaptability, and self-awareness or self-esteem, and the feedback loop it creates with perceived employability and likelihood that one will be employed. Forrier and colleagues (2015) found that one's internal, within the current organization, or external, focus on organizations beyond the current, focus was related to employability perceptions.

These theoretical frameworks are relevant in the transition of military veterans to civilian work life, and they address demographic, work, and dispositional factors that influence such a transition. Without sufficient quantitative-research analysis of their predictive transitional value, these factors may seem to remain disjointed. The predictive transitional value is important in shedding light on the needs of civilian individuals to prepare for second or later careers and informing military veterans on their transition. The models and theories have not been specifically referenced for use in the limited program evaluations conducted with regard to military-veteran reintegration (Gates et al. 2013; Weaver, 2013).

The present study brings focus to the cross-model themes within the civilian literature and combines those with the limited information presented in the veteran population. Qualitative reintegration studies emphasize the need for social support to fill gaps that are left by the loss of the military support network and that are increased by family tension (Johnston et al., 2010; Koenig et al., 2014; Kukla et al., 2015; Larson & Norman, 2014; Moorhouse, 2014; Schaefer et al, 2013; Schmidt et al, 2013; Van Til et al., 2013; Weaver, 2013; Wilson, 2014). Weaver (2013) and Zogas (2017) recommend that separating veterans receive training for re-entry to civilian life through a re-acculturation process similar to the immersion in basic-combat-training experiences used to initiate recruits to military culture. This immersion refers to support for the reintegration process that includes how to dress for interviews, preparation for the interviewing process, development of relationships outside of the military hierarchy, and the subjective process of redefining one's self-concept and personal worth (Koenig et al., 2014; Osilla & Van Busum, 2012). Koenig and colleagues (2014) and Kukla and colleagues (2015) categorize social support needs into three domains: interpersonal support that limits isolation, resources for resilience, and professional support. These studies focus on different elements of social support, with Weaver (2013) and Zogas (2017) focused on general lifestyle and Koenig and colleagues (2014) and Kukla and colleagues (2015) focused on specific skill development and the connection to one's personal self-esteem and self-efficacy.

Vigoda-Gadot and colleagues (2010) conducted research on military veterans in Israel, finding that social capital, the perception of organizational politics in the new workplace, and work-family conflict were related to success in a second career. In addition, preparation to retire was positively related to social capital, size of personal network, and life satisfaction. Forrier and colleagues (2015) demonstrated that the similar constructs of human capital, social capital, adaptability, and self-awareness (forming movement capital) influenced perceptions of employment opportunities and employability.

Although Forrier and colleagues (2015) combine the factors of self-efficacy, employment-related social networks, adaptability to position demands, and self-esteem or awareness into a single construct of movement capital, Vigoda-Gadot and colleagues (2010) allow for each to individually relate and predict success in a second career. Success, as defined by Vigoda-Gadot and colleagues (2010), is evidenced by career satisfaction, life satisfaction, intention to stay in the job. Each of these success measures requires the individual to hold a position. Forrier and colleagues (2015) examined the individual's perception of employability both within and outside the current organization. They found that current employment affected perceptions of employability. Because this relationship is in question with exiting veterans, it should also be examined in this population.

Due to the dearth of quantitative research on factors predicting a successful transition of military veterans to the civilian workforce, the present study builds on the Vigoda-Gadot and colleagues' (2010) and Forrier and colleagues' (2015) research. In this work, we use selected predictors of Vigoda-Gadot and colleagues (2010) duplicated by Forrier and colleagues' (2015) construct of movement capital, and we add potential predictors congruent with the civilian and qualitative literature in career transition, such as, number of years of military service, number of deployments, age, gender, race-ethnicity, highest

level of education, financial responsibility for others, preparation for retirement, resilience, self-esteem, satisfaction with life, EQ, cultural intelligence, self-efficacy, work ability, job satisfaction, and social capital, which have been examined across a veteran population (Bao & Luo, 2015; Greer, 2013; Griswold & Ellis, 2012; Hees et al., 2012; Jaensch et al., 2015; Johnston et al., 2010; Larson & Norman, 2014; MacPhee et al., 2013; Magnano et al., 2016; Nilsson & Ekberg, 2013; Özer et al., 2016; Rasdi et al., 2011; Schneider et al., 2013).

This study is focused on the predictive factors for securing employment and for being employed. The hypotheses are as follows:

Hypothesis 1: Age, gender, race-ethnicity, number of years of military service, number of deployments, highest level of education, financial responsibility for others, preparation for retirement, resilience, self-esteem, satisfaction with life, EQ, cultural intelligence, self-efficacy, work ability, job satisfaction, and social capital are predictive factors for securing employment (as defined by how long to secure employment after ETS).

Hypothesis 2: Age, gender, race-ethnicity, number of years of military service, number of deployments, highest level of education, financial responsibility for others, preparation for retirement, resilience, self-esteem, satisfaction with life, EQ, cultural intelligence, self-efficacy, work ability, job satisfaction, and social capital are predictive factors for being employed (as defined by how long in current employment).

Method

This study closely follows the Vigado-Gadot and colleagues (2010) methodology. Military veterans were recruited through snowball sampling, including social media (e.g., Facebook, LinkedIn), emails, and fliers sent to military veteran organizations, university list-servs, and government programs serving military veterans. Within the invitation to participate in this study was a link and a QR code for participants to access the informed-consent form and measurements by computer or smartphone. Participants were asked to read the informed-consent form; if they consented to participate, they read the instructions for each instrument and completed them in one sitting in a location of their choice. Anonymity was safeguarded; researchers were blinded to the participants, no names were recorded, and identifying information was codified in the server. No compensation was provided for participation. Guidelines for human research were accounted for and university institutional review board approval was obtained.

Participants

Of the 150 participants (United States of America military veterans) who volunteered to participate, 146 met the inclusion criteria. The inclusion criteria comprised all military veterans (federal, reserve) who were at ETS and were transitioning to civilian work life. Demographic information on the participants is presented in tables one and two. A power analysis using G*Power 3.1 (Faul et al., 2009) with .80 power, anticipated medium effect size $f^2 = .15$ (see Cohen, 1988), and 17 predictors found that a sample size of $N = 146$ suffices for a multiple regression. The alpha level was set at $\alpha = .05$.

Measurements

A demographic questionnaire was administered first, followed by 10 standardized measurements, taking approximately 30 minutes to complete. The administration of the demographic questionnaire and measurements was done electronically through a secured survey system server.

Standard demographic variables were collected with regard to age (in years), gender, and race-ethnicity (Larson & Norman, 2014). Unique demographics, consistent with military-related literature, included the number of years of military service and number of deployments (Larson & Norman, 2014; Vigoda-Gadot et al., 2010). Additional demographics, consistent with employment studies, included highest level of education (e.g. high school; bachelors; masters; doctorate), financial responsibility for others (yes/no), how long to secure employment after ETS (in months), and how long in current employment (in months; Larson & Norman, 2014; Vigoda-Gadot et al., 2010).

The measurements consisted of the following: Preparation for Retirement, the Brief Resilience Scale, the Rosenberg Self-Esteem Scale, the Satisfaction with Life Scale, Emotional Intelligence, Cultural Intelligence, the General Self-Efficacy Scale, the Work Ability Score (WAS), the Job Satisfaction Subscale, and Social Capital. The measurements (operationalized variables) and demographics were chosen in line with the literature in career transition and military service (Bao & Luo, 2015; Greer, 2013; Griswold & Ellis, 2012; Johnston et al., 2010; Larson & Norman, 2014; MacPhee et al., 2013; Magnano et al., 2016; Nilsson & Ekberg, 2013; Özer et al., 2016; Rasdi et al., 2011).

Preparation for retirement or separation was operationalized through Baruch and Quick's measure of efficiency of preparations at an organizational and individual level (Vigoda-Gadot et al., 2010). It included two items with a three-category response scale of 1 = *no*, 2 = *yes, but did not use*, and 3 = *yes, used it*. Cronbach's alpha, as reported by Vigoda-Gadot and colleagues (2010), was .69.

The Brief Resilience Scale of Smith and colleagues (2008) was used to measure resilience, which was defined as the ability to bounce back from stress. In samples ranging in mean age from 19.8 to 62.8 years, a one-factor solution resulted from principal components factor analysis, explaining 55% to 67% of the variance with a Cronbach's alpha of .8 to .91. Test-retest reliability at 1 month was .69 and at 3 months .62 (Smith et al., 2008). Convergent validity with optimism, purpose in life, social support, and behavioral engagement was found (Leontjevas et al., 2014; Smith et al., 2008). In 2014, Leontjevas and colleagues reported a Cronbach's alpha of .83 and convergent validity of .35 at baseline and .50 at 4 weeks.

Self-esteem was measured by the Rosenberg Self-Esteem Scale containing 10 items of global self-worth (Rosenberg, 1989). Each item is rated on a four-point Likert scale ranging from strongly agree to strongly disagree. High scores reflect feelings that one's self is respected by self and is someone worth knowing (Rosenberg, 1989). An individual with low scores lacks respect for self and is contemptuous of self (Rosenberg, 1989). Johnson and colleagues (2016) reported a Cronbach's alpha of .85, and Rasdi and colleagues (2011) reported an internal consistency of .73 while Mullen and colleagues (2013) confirmed the original factor structure of the scale.

The Satisfaction with Life Scale of Diener and colleagues (1985) measures self-reported global life satisfaction. A single factor resulting from five items rated on a 7-point Likert scale accounted for 66% of variance with a 2-month test-retest coefficient of .82 for undergraduate students (Diener et al., 1985).

Emotional intelligence was assessed as a characteristic or trait consisting of emotional assessment of self and others, expression of emotion, regulation of emotion in self and others, and use of emotion to problem solve (Schutte et al., 2009). A 33-item inventory using a 5-point Likert rating scale is composed of four scales: Perception of Emotion, Managing Own Emotions, Managing Others' Emotions, and Utilization of Emotion (Schutte et al., 2009). A Cronbach's alpha of .90 was found with a development sample of 346 with additional studies consistently resulting in Cronbach's alphas of .87 (Schutte & Malouff,

2011; Schutte et al., 1998; Schutte et al., 2009). Age and gender did not moderate results for this scale (Schutte et al., 2007).

Cultural intelligence, the capability of an individual to function and manage in culturally diverse settings, is related to general intelligence but is an individual trait found to be distinct from other stable personality traits (Ang et al., 2007). The original 20-item scale was reduced to 12 items due to overlap with emotional intelligence as measured by Schutte and colleagues (1998), resulting in four factors of four items each (Ang et al., 2007). In initial studies, the scale explained unique variance beyond emotional or general intelligence with factor reliabilities ranging from .70 to .88 (Ang et al., 2007). Additional studies resulted in Cronbach's alphas of .81 to .89 with 36% of the task performance variance explained by cultural intelligence (Ang et al., 2007).

The sense that one can accomplish a novel task and adjust to adversity from a variety of challenges is general self-efficacy as measured by Schwarzer and Jerusalem's General Self-Efficacy Scale (Luszczynska, Guitérrez-Doña, et al., 2005). Strong internal consistencies (alpha ranging from .75 to .91) are consistently demonstrated (Scholz et al., 2002). Strong correlations have been found for self-efficacy, psychological quality of life and job and life satisfaction (Luszczynska, Scholz, et al., 2005). The 10-item scale rated on a 4-point Likert scale has repeatedly explained unique variance beyond identified correlations (Luszczynska, Guitérrez-Doña, et al., 2005).

Workability is defined as the worker's self-reported evaluation of current self-assessment versus the individual's lifetime best (El Fassi et al., 2013). This assessment forms the WAS as defined by this single question (El Fassi et al., 2013). Convergent validity was found for the WAS and the longer, 7-item, Work Ability Index, allowing for use of the single item to assess the construct (El Fassi et al., 2013).

Bowling and Hammond (2008) demonstrated construct validity of the Job Satisfaction Subscale of the longer Michigan Organizational Assessment Questionnaire. Beyond meta-analytic evidence of construct validity, the Job Satisfaction Subscale possesses face validity to affective job satisfaction, contains only three items, and is a global rather than specific factor assessment of satisfaction (Bowling & Hammond, 2008). Across the meta-analysis the mean internal consistency was .84 and the mean test-retest reliability was .50, both evidence of reliability (Bowling & Hammond, 2008). Joshi and colleagues (2015) reported interitem correlations of .71.

Social capital derives from social capital theory fostering the relationship of an individual's social network and career success (Vigoda-Gadot et al., 2010). Important to social capital are access to information, resources, and sponsorship, which are structures creating value and offering aid to individuals in their environment (Vigoda-Gadot et al., 2010). Consistent with previous international employment and military literature, social capital was measured as the number of individuals identified as helping, speaking in favor of, supplying information, and supporting the individual (Vigoda-Gadot et al., 2010). Cronbach's alpha was .92.

Statistical Analyses

The IBM Statistical Package for the Social Sciences (SPSS) Statistics (IBM Corp, 2016) was used for descriptive and inferential analysis. The descriptive analysis included mean, median, mode, standard deviation, and percentages. A multiple-regression analysis was conducted for each hypothesis. Multiple-regression assumptions were checked and met, except criterion data was positively skewed; thus, Lg10

transform was applied to normalize the skewed data. Once the data were normalized, a stepwise multiple regression was conducted.

Results

Descriptive Statistics

The results of the descriptive statistics are presented in Tables 1 and 2 as follows:

Table 1
Demographic Characteristics Among Survey Participants

Characteristic	Female (n = 33)	Male (n = 113)	Percentage
Race-ethnicity			
Asian	1	2	2.05
Black/African American	4	13	11.64
Hispanic/Latino	5	8	8.90
Native American	1	2	2.05
Other	1	7	5.48
White/Caucasian	21	81	69.86
Highest level of education			
Some high school	1	2	0.68
High school graduate	1	6	4.79
Some college courses	5	22	18.49
College graduate	10	36	31.51
Some graduate courses	2	9	7.53
Master's degree	10	32	28.77
Doctorate degree	1	5	4.11
Other	3	3	4.11
Financial responsibility for others			
No	10	17	18.49
Yes	22	96	80.82
No response	1	0	0.68

Table 2
Age, Job Search, Employment, Length of Service, and Number of Deployments

Characteristic (in years)	Mean	Median	Mode	Standard deviation
Age	45.60	44.50	35.00	11.72
How long to secure employment after ETS	0.60	0.25	0.08	1.06
How long in current employment	4.19	1.58	0	6.59
Number of years of military service	15.30	14.50	20.00	9.01
Number of deployments while in the military	4.66	2.00	1.00	8.45

Inferential Statistics - Stepwise Multiple Regression Analyses

For the criterion securing employment, the results are as follows:

Model-1 - Predictor satisfaction with life ($\beta = -.201, p .015 < .05$), with an R^2 for the overall model of 4% and an adjusted R^2 of 3.4%, a medium-sized effect according to Cohen (1988). The $F(1, 143) = 6.035, p .015 < .05$.

Model-2 - Predictors satisfaction with life ($\beta = -.211, p .010 < .05$) and race-ethnicity ($\beta = .182, p .026 < .05$), with an R^2 for the overall model of 7.3% and an adjusted R^2 of 6%, a medium-sized effect according to Cohen (1988). The $F(2, 142) = 5.629, p .004 < .01$.

For the criterion, being employed, the results are as follows:

Model-1 - Predictor age ($\beta = .398, p .000 < .01$) with an R^2 for the overall model of 15.8% and an adjusted R^2 of 15.3%, a large-sized effect according to Cohen (1988). The $F(1, 143) = 26.924, p .000 < .01$.

Model-2 - Predictors age ($\beta = .617, p .000 < .01$) and the number of years of military service ($\beta = -.417, p .000 < .01$), with an R^2 for the overall model of 28.5% and an adjusted R^2 of 27.5%, a large-sized effect according to Cohen (1988). The $F(2, 142) = 28.286, p .000 < .01$.

Model-3 - Predictors age ($\beta = .614, p .000 < .01$), the number of years of military service ($\beta = -.404, p .000 < .01$), and workability ($\beta = .176, p .013 < .05$), with an R^2 for the overall model of 31.6% and an adjusted R^2 of 30.1%, a large-sized effect according to Cohen (1988). The $F(3, 141) = 21.692, p .000 < .01$.

Model-4 - Predictors age ($\beta = .617, p .000 < .01$), the number of years of military service ($\beta = -.395, p .000 < .01$), workability ($\beta = .190, p .007 < .01$), and social capital ($\beta = -.139, p .048 < .05$), with an R^2 for the overall model of 33.5% and an adjusted R^2 of 31.6%, a large-sized effect according to Cohen (1988). The $F(4, 140) = 17.607, p .000 < .01$.

Discussion

The challenges of transitioning from the United States military to the civilian workforce are well documented (Zogas, 2017); however, there is a gap in the body of knowledge about what dispositional and work factors can lead to a more successful transition to the civilian workforce. The results of the stepwise multiple regression (all models) present a picture of transition in the veteran population that has some similarities to that of the civilian population when seeking employment at older ages, yet some factors seem to play a key role in the veteran population, such as age, race-ethnicity, the number of years of military service, satisfaction with life, workability, and social capital (Rey & Extremera, 2015; Volmer & Spurk, 2011; Zacher, 2014). Protean or proactive behaviors have been described in the literature and have been stated as vital to career development in a new self-directed career (Briscoe et al., 2012; Grimland et al., 2012; Volmer & Spurk, 2011). Within this perspective is the need for individuals to believe in themselves, be in an environment that fosters growth, and have a sense of satisfaction in life, among other characteristics (Rosenberg, 1989; Schwarzer & Jerusalem, 1995). Together these factors drive individuals to cement their professional development as they mature, acquire longevity in their career settings, assess their current ability to work, and strengthen their social/professional network, which in turn positively influences their life satisfaction (Erdamar & Demirel, 2016; Ferris et al., 2013; Mache et al., 2014). Although satisfaction with life increases the likelihood of a successful transition from military service to civilian work, social capital indicates that support is required to bolster one's personal assessments of self-worth, skills, and ability to work because self-identity does alter self-perceptions (Amiot et al., 2015).

There were two purposes in conducting this study. The first was to start to close the gap and to begin a dialogue about the factors that may lead to a more successful transition from the military to the civilian

workforce. In starting this discussion, the authors hope to increase the number of studies that are conducted to help service members in this critical phase of transition; there are few at present. Such studies should increase the sample size, which was a limitation in the present study.

The second purpose was to determine if there are predictors that can be used to develop initiatives within the military and after service to improve employment outcomes for veterans. Although little can be done to change demographic predictors, such as race-ethnicity, age, and length of service (number of years in the military), initiatives can be designed to strengthen dispositional factors, such as life satisfaction, workability, and social capital. It is recommended that initiatives be explored specifically targeted to such factors.

Declaration of Conflicting Interests

The authors declare that there is no conflict of interest.

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A Practice–Science Partnership: An Integrated Approach to I-O Psychology

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Over the last 10 years we have been working together to advance the field of identifying and developing high potential leadership talent. As our work evolved and advanced, we have worked hard to integrate the science and the practice of our profession to address a key business need. We believe we have advanced both the practice and the science of high potential leadership talent. We think of this effort and process as a *practice–science partnership*. We believe that it offers an integrated approach to I-O psychology. It resulted in significant advances in the client organization as well as numerous published contributions to our profession.

In this article we describe our approach to a practice–science partnership. First, we provide a brief historical perspective and then discuss the science–practice gap and factors that are contributing to the gap. We then describe the process and approach we used to implement a practice–science partnership. We close with some suggestions on how to pursue a practice–science partnership.

Historical Perspective

There has been a longstanding recognition of the two perspectives in industrial-organizational psychology: science and practice. This reflects a historical and fundamental tension between the two worlds of psychology, science and practice.

I-O psychology has been one of the more applied fields in psychology, with origins in addressing real-world applied problems related to work, selection, and leadership. In the 1970s the field boomed when some major applied-research efforts, such as the AT&T Management Progress Study (Bray, Campbell & Grant, 1974), were published. They opened the doors for expanded organizational applications of I-O psychology knowledge and research results. Numerous senior I-O psychologists, such as Doug Bray, Marv Dunnette (1971), and Bernie Bass (Bass & Stogdill, 1981), led the way in demonstrating how this new knowledge could be leveraged for organizational and individual applications, benefits, and success.

Our field has long recognized and valued the scientific foundations underlying our work and has depended on I-O psychologists to document and expand our scientific knowledge. However, over the last 40 years, I-O psychology practice has noticeably expanded, and I-O practitioners are now a majority of the SIOP membership. Practitioners have energetically developed and applied I-O psychology knowledge and skills to important organizational issues. At the same time our I-O scientific knowledge has also greatly expanded into related fields such as organizational behavior, organization development, and human-resource development.

The Science–Practice Gap

However, despite the clear success of the field, a science–practice gap in I-O psychology knowledge and understanding, which has always present to some degree, has become more visible over the last 20 years, and there is a shared perception among others that the gap is widening (Cober, Silzer & Erickson,

2009a; 2009b; Silzer et. al., 2008; 2010). In a SIOP survey, I-O practitioners indicated that I-O practice was ahead of I-O science/research in 19 out of 26 core I-O content areas in our profession, whereas science/research was seen as being ahead of I-O practice in only five content areas (Silzer, et al., 2008). Researchers are regularly noting the lack of “evidence-based practice” in our field (see IOP Journal, March 2011 issue for an extended discussion), and sessions at the annual SIOP conference each year highlight issues in practice that have not yet been addressed by research.

So there is a perception by many I-O psychologists that there is a widening science–practice gap (Cober, Silzer & Erickson, 2009a; 2009b; Silzer et. al., 2008; 2010). We are not sure anyone can say specifically what caused it or if it is truly getting worse; we all have our own views on this. The origins of such a complex issue are never easy to identify. But we think there are some trends in the profession that may be contributing to it. If we take a hard look at ourselves we recognize challenges on both sides of the science and practice divide here, such as:

- The noticeable absence of almost all I-O practitioners from editorial boards of key I-O journals and the journal resistance to accepting practice-oriented journal articles. Also the resistance of journals to require that every article address the applied implications of the specific research.
- The limited training and education on practice-related topics and the underlying scientific foundations of those practice areas by I-O psychology graduate programs.
- The exclusion of I-O practitioners from the SIOP Frontiers Book Series Editorial Board and their exclusion as book editors in the same series. These books and chapters often do not discuss I-O practice or the accumulating knowledge and advances by I-O practitioners. Although this may reflect the strategic intent of the series, it reinforces the exclusion of I-O practice by its very design. Moreover, this exclusionary approach is not true in the Professional Practice Series, where both practitioners and academics have both made important contributions (Silzer & Parson, 2014).
- The scientifically questionable products, programs and services that are offered by some I-O practitioners that have little scientific underpinnings or validity (see recent issues of *IOP Journal*).
- The major books in our field that purport to offer an annual review or a handbook of I-O psychology but only include academics as chapter authors, who in turn rely almost exclusively on the journal research literature for their understanding of the field.
- Some of the sessions presented at the annual SIOP conference that are nothing more than a *show and tell* promotion of some application of a new product, tool, or consulting service with little or no discussion of any underlying scientific principles or knowledge.
- The lack of awareness, or at times even curiosity, by some practitioners of relevant research literature on a professional topic of interest to an I-O practitioner.

There are many more examples of this distancing in our profession between science and practice. There have been many efforts over the years to address some of these challenges, such as special journal sections (e.g., the now defunct Practitioner Forum in the *Personnel Psychology Journal*), entire journal issues dedicated to closing the gap (such as those that occur in the *Journal of Business and Psychology*, see Church, 2011), and frequent articles in SIOP publications (Cober, Silzer & Erickson, 2009a; 2009b; Silzer et al. 2010), as well as many relevant sessions at the annual SIOP conference. However, they continue to have only a marginal impact.

Underlying Factors Leading to the Science–Practice Gap

We think there are a few underlying themes that are limiting our efforts to close the gap.

- a. *Growth of the field.* The field of I-O psychology has grown substantially from its origins. As a result it is becoming increasingly difficult to keep up with the full range of information and findings from I-O science and I-O practice. Individuals, organizations, and graduate programs have a difficult time

keeping up with the full breadth of our profession. Graduate programs offer few if any courses on important I-O practice areas such as executive coaching, talent management, and individual assessment (Nagy, 2018). Based on our professional networking, some I-O practitioners no longer can find the time to read I-O research journals. Everyone seems to us to be too busy to keep up with advances in the field except in the areas that are immediately relevant to their own current research or practice. Just consider the 3 full days of presentations at the annual SIOP conference, and the proliferation of I-O psychology books. Just keeping up with those is almost a full-time job.

- b. *Career isolation.* Many I-O psychologists have made an early career decision to be either a researcher/scientist or an applied practitioner. That decision often is a clear fork in the career road that is hard to reverse. Because of personal choices, career demands, and organizational pressures (on both researchers and practitioners), the result is often an intense focus on being successful as an academic/researcher or a practitioner. The reward systems for researchers and practitioners are very different and likely encourage this bifurcation.
- c. *Limited contact.* Researchers may connect only with other researchers who are relevant to their own work. They rarely attend the annual SIOP Leading Edge Consortium, which is designed to present recent advances in I-O practice and is well attended by leading I-O practitioners. Practitioners form special-interest networks, attend specific LECs, and join LinkedIn groups focused on particular practice areas, such as executive coaching and leadership assessment. Both groups may have limited contact with colleagues who have chosen the other career path. Often conference sessions, workshops, and other professional-development opportunities tend to focus on the interests of researchers or practitioners. The result is that they consequently attract professionals from one career track or the other but rarely both. It reflects what we see as the growing balkanization, rather than a coming together, of the discipline.
- d. *Pressures from other disciplines:* I-O psychology is no longer (if it ever was) the sole domain of all things organizational or individual in the form of data-based insights, measurement, or large-scale interventions. Today HR professionals, data-analytic professionals, as well as clinical, social, and counseling psychologists are entering the mainstream I-O practice areas. This results in some domain confusion and dispersion. For example, I-O practitioners have to compete in the marketplace with individuals from a wide range of backgrounds (such as HR, business, life coaching) who are offering psychological services (such as psychological assessment). Over time, many I-O practitioners, however, come to realize that our expertise and our science can frequently distinguish us from everyone else.

There are things that SIOP and I-O psychologists can do to overcome these challenges. For example both of us work hard to stay active and involved in the profession, to teach in graduate programs, to stay connected with academic colleagues, to frequently write and publish professionally, and to stay current on the field and the profession. Of course others may not have the same professional interests, but we do think all I-O psychologists have some responsibility for the sustainability and integration of the field. That should include a commitment to both I-O practice and I-O science.

Benefits to Integrating Our Practice and Our Science

There are, in our view, numerous benefits for our colleagues and the profession by encouraging an integration of practice and science. It increases our professional expertise, impact, and influence. In our opinion this results in more significant contributions to our profession and to our organizational clients and community. The researchers are likely to gain more insight and understanding of the complexities of applied work that should result in more relevant and useful research. I-O practitioners are likely to discover that significant research is being done that is relevant and helpful to solving applied problems. Perhaps SIOP should create more professional recognitions for members who are working to integrate our practice and our science.

New Metaphors Are Needed

Often the metaphor of a bridge is used to suggest a physical connection between our science and our practice. This is an easily understood and visualized metaphor and is not new to the field (see Church, 2011; Hyatt et al., 1997; Rynes, 2012); however, it may not be the most helpful one. It implies two separate entities, such as river banks, that can be connected but never fully integrated. The bridges over the Mississippi River have not integrated Minneapolis and St. Paul, nor has the bridge over the Bosphorus River in Istanbul integrated Europe with Asia.

After years of observing and actively participating in these discussions and debates ourselves, we would suggest that a new approach and terminology should be introduced into the lexicon. Perhaps a new concept is needed that moves the field forward and implies the integration of two perspectives rather than just connecting across a permanent divide. Perhaps there are other metaphors or concepts that should be considered such as:

- Two sides of the same coin
- Collaborative partnerships
- High performing teams
- A business merger
- A dynamic algorithm
- An integrated network
- A total system

These examples imply that science and practice could work together with close collaboration and connectedness, for shared goals and at some point full integration. Surely the integrated whole is greater than the component parts. We are open to exploring these and other metaphors. We have been working from a concept of practice–science partnership (PSP). Each of us has a personal commitment to integrating practice and science despite operating in somewhat different spheres of our own. We have also been doing this with others in the field of I-O psychology (both with practitioner and academic colleagues) for the past 20+ years.

A Partnership to Address a Business Need

Our Objective

Each of us has extensive career experience working in organizations and in consulting to organizations and individuals. We have both leveraged I-O science and I-O practice to advance individual, group, and organizational success. So we were both comfortable and experienced in dealing with the interface between science and practice and between scientific prescriptions and organizational realities.

Over the last 15 years, talent management has emerged as an important strategic and organizing framework of human resources in organizations, and in 2006 we participated in one of the first SIOP sessions focused on talent management (Church, 2006; Silzer, 2006), which was extremely well attended. In 2008, as organizations were shifting their focus in this direction, we became acutely aware of the critical emerging business need to accurately identify and develop individuals early in their careers who have the potential to be effective future leaders in an organization.

This was a clear example of a practice-based need that was ahead of the science-based curve, as our clients were beginning to look for answers to these same questions as well (there were no major books on talent management or high-potential talent at the time, but one soon emerged—Silzer & Dowell, 2010).

Based on our experience and knowledge we thought I-O psychology was uniquely suited to address this strategic issue.

We decided to initiate a comprehensive and systematic process for developing effective solutions that would be sustainable over time. Specifically, we were interested in directly addressing the fundamental challenge of talent management in businesses, to ensure the readiness and availability of leadership talent to sustain the business over time. This led us to the issue of how to identify high-potential leadership talent earlier in their careers. What are the key factors to consider when identifying and assessing the leadership talent potential in individuals?

Our objectives were to:

- Address the strategic business issue of high-potential talent identification by developing and implementing effective and sustainable solutions
- Capitalize on relevant I-O science and I-O practice and look for synergies across them.

Our Process

We partnered together to follow a process that worked to leverage both science and practice and inform each of the knowledge and advances from the other. Our process steps were to:

1. Define the business need
2. Determine the current state of leadership potential
3. Review relevant research and practice
4. Build a comprehensive model of high-potential leadership talent (see Figure 1)
5. Develop and implement tools and programs that support the model
6. Evaluate outcomes and determine organizational impact

We think that our process provides a good example of how I-O psychology can address real business needs with an effective process that leverages and integrates both I-O science and I-O practice. Our focus here is on the larger practice-science integration challenges in our profession. We use our work on high potential talent to as an example of how to pursue a practice-science partnership. See Silzer, Church, Rotolo, and Scott, 2016, for a full and discussion of the detailed process steps and outcomes, and the lessons we learned along the way in addressing the high-potential business issue.

The Integration of Science and Practice

We have found that some of our I-O colleagues see the integration from either a practice or a research perspective and want the other side to walk across “the gap in the bridge” to their side. Some I-O practitioners would like researchers to produce more “relevant research.” Some researchers would like practitioners to practice in much closer allegiance with available research. Although these are typically well-meaning attempts to connect science and practice, they seem half steps or a temporary approach that soon disappears in the middle of the night.

Our interest was to pursue an interaction where I-O science informs I-O practice and I-O practice informs I-O science. But more than just establishing a two-way communication we wanted to also integrate science and practice under shared goals, like a high-performing team or a collaborative partnership.

We wanted to make sure practice and science was closely aligned throughout, and importantly, as the work continued to evolve over time. Table 1 outlines some of the ways that we worked to include I-O practice and I-O science in each step of the process.

Table 1

The Role of Science and Practice in Our Work on the Identification of High Potential Talent

Process steps	I-O science role	I-O practice role
1. Defining the business need	Reviewed research on the connection between talent management efforts and business success (see Silzer & Dowell, 2010)	Drew from own applied practice experience, connected with practitioner colleagues and reviewed practice literature to understand and define the underlying business need (see Church & Silzer, 2014; Silzer & Church, 2009a, 2009b)
2. Determining the current state of leadership potential	Developed an organizational-practice survey based on research related to key leadership-success variables (see Silzer & Church, 2009a, 2010)	Developed an organizational-practice survey of HiPo practices in some organizations Surveyed 20 leading companies on their organizational practices in managing high-potential talent (see Silzer & Church, 2009a, 2010) Later expanded to survey wider population (see Church & Rotolo, 2016; Church, Rotolo, Ginther & Levine, 2015)
3. Reviewing relevant research & practice	Completed a thorough review of research literature related to early identification of High-potential leaders (see Silzer & Borman, 2017; Silzer & Church, 2009a; 2009b 2010;)	Completed a review of all research based high-potential models being used in consulting practices (see Silzer & Church, 2009a; 2009b; 2010)
4. Building a comprehensive model of high-potential leadership talent, the blueprint model of High Potential	Developed a theoretical and operational model of high-potential talent that is being used for additional research (see Church, et al., 2015; Church & Silzer, 2014, Silzer & Church, 2009a, 2009b)	Developed a theoretical and operational model of high-potential talent that is being used operationally in numerous leading organizations (see Church, et al, 2015; Church & Silzer, 2014, Silzer & Church, 2009a, 2009b)
5. Developing & implementing tools & programs that support the model	Researched and identified valid assessment measurements that implemented the blueprint model in a leading organization (see Church & Silzer, 2014; Church et al. 2015; Silzer, Church, Rotolo & Scott, 2016).	Developed assessment tools, instruments, and programs to implement blueprint model in a leading organization at multiple levels (see Church, 2014; Church, Del Giudice & Margulies, 2017; Church & Rotolo, 2016; Church & Silzer, 2014; Happich & Church, 2016; Silzer, Church, Rotolo & Scott, 2016).
6. Evaluating outcomes & determining organizational impact	Currently conducting organizational research on outcomes and impact on prediction success, participant reactions, relationship to performance (see Church, et al., 2017; Church, et	Determining impact on organizational culture and senior-leader support (see Church, 2017; Church, et al., 2017, 2015; Church & Rotolo, 2016; Happich & Church, 2016)

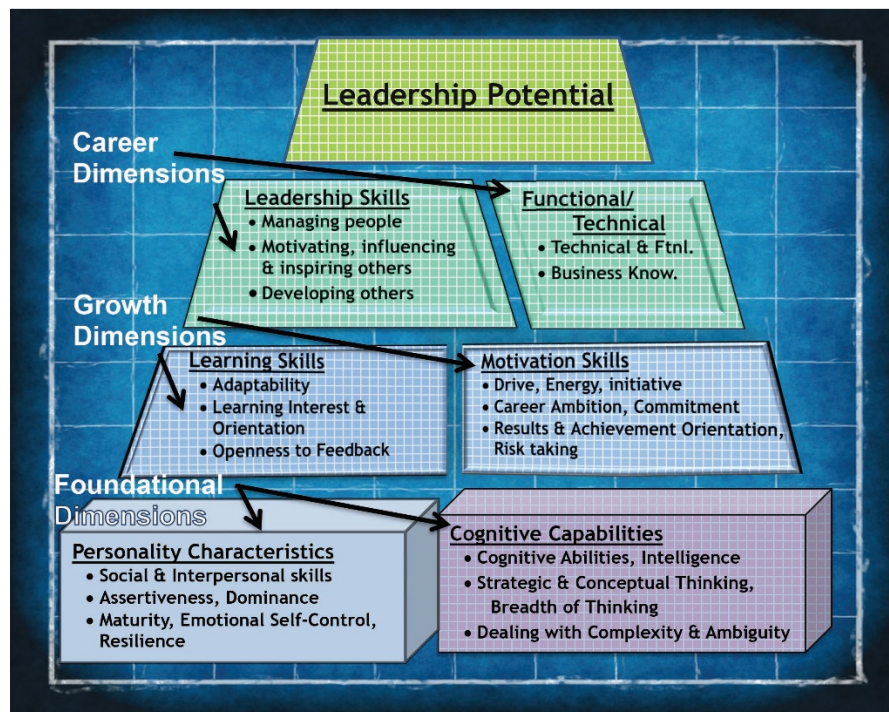
	al., 2015; Church & Rotolo, 2016; Hapich & Church, 2016)	
7. Expanding our learnings to the broader field	See Scott et al., 2017; Silzer & Borman, 2017	

Throughout this process there has been regular attention to involving and integrating knowledge from both I-O practice and I-O science. It has been a PSP at each stage. One informs the other and the integrated outcomes are greater than the parts.

Our Approach at PepsiCo

Seven years ago, PepsiCo embarked on a journey to enhance the level of objectivity, consistency, rigor, and impact of their talent-management processes at a total systems level. This effort has resulted in a number of significant changes and a fundamental realignment of the HR function to enable growth and development across the entire employee life cycle. A key enabler of this shift has been the introduction of a fully integrated, evidence-based assessment-and-development process that addresses the key question of how to identify the best and brightest talent and ensure they achieve their full potential.

This process, called the Leadership Assessment and Development (LeAD) program, was based on the Leadership Potential Blueprint (see Figure 1 and Silzer & Church, 2009a), which was a product of this project. The Blueprint addresses the question not only of “What do we mean by high potential?” but also and more importantly, “Potential for what?” That is, it outlines the fundamentals of global potential for success and also illustrates that different capabilities are needed to be successful in different roles.



© Silzer & Church, 2009

Figure 1. Leadership potential blueprint

Adapted from “The Pearls and Perils of Identifying Potential,” by R. Silzer and A. H. Church, 2009a, *Industrial and Organizational Psychology Journal: Perspectives on Science and Practice*, 2, p. 401. Copyright 2009 by Society for Industrial and Organizational Psychology.

Outcomes

Numerous leading-edge high potential programs and systems have been introduced into PepsiCo and other leading corporations as a result of this integrated effort. As a result, PepsiCo is now seen as one of the leading corporations in the world for identifying and developing future leadership talent. In addition, the Blue Print Model (see Figure 1) being adopted widely in organizations, our related high-potential articles/publications have been widely read and our conference presentations fill meeting rooms. For example at a recent SIOP conference we led a Community of Interest session on developing organizational programs to identify high potentials. There was overwhelming attendance of about 200 people and we had to move to a much larger room (usually these sessions attract 20-30 people). The BluePrint model and related publications are being cited in numerous other professional articles and books.

More recently the SIOP 2018 Leading Edge Consortium was on *High Potentials: Identifying, Developing and Retaining Future Leaders* (Chairs Rob Silzer and Allan Church). This major conference attracted over 200 participants. The results included strong LEC and program evaluations ratings by participants, very positive responses to the LEC innovations, high attendance and strong ratings for several pro-consortium workshops, a record level of LEC sponsors and a record *net profit* for SIOP. The LEC was a major success and established High-Potential Leadership Talent as an important practice and research area in our field.

In our view this demonstrates the power of integrating science and practice into solutions that effectively meet organizational and business needs. It was a highly impactful process that led to highly successful outcomes (see Scott, Church and McLellan, 2017).

Suggestions for future Practice-Science Partnerships

This process is ongoing as we continue to explore, research, and implement variables, programs, and outcomes related to the early identification of high-potential talent. We did identify some guidelines that we tried to follow. These guidelines are more fully described in Silzer et al, 2016.

1. Clearly define the business need.
2. Identify a framework that is grounded in theory and research.
3. Develop or utilize tools and assessments based on a rigorous analysis.
4. Validate the process.
5. Gain senior leadership support.
6. Align the program design with the culture.
7. Pay attention to participant reactions for all program phases.
8. Lay the groundwork for future ROI studies.

We also have some suggestions on how to pursue PSPs. They include:

- Work with colleagues who are personally committed to the practitioner-scientist model
- Explore and integrate current I-O practice and I-O science at every stage
- Focus on addressing a real-world need, whether for an individual, a group or an organization, and ensure the practical outcomes are useful and effective
- Base all work in sound science and critical analysis
- Regularly look for ways to extend both the practice and the science
- Communicate Research findings and Practice applications to colleagues (both in academia and practice) and work with them to ensure full understanding not just a hand-off

We agree that in general the practice—science division in our field is real and probably growing in our profession for the reasons cited above. We think a new metaphor is needed that reflects a true integration,

that the whole is greater than the parts. We like the PSP idea. But that does not mean that the partnership must always be between a researcher and a practitioner (it certainly can be), but rather between a science mindset and a practice mindset or perspective. Each of us should have a professional commitment to integrating both and to keep working back and forth to integrate them. We must be careful in assuming that just because someone comes with a practice perspective they do not consider the science, and vice versa. We have tried to always consider both sides in our work as best we can, and we think we have had some success.

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Obituary: Kimberly M. Perry

Jeffrey M. Cucina & Kathleen A. Stewart
U.S. Customs and Border Protection



On January 24, 2020, the I-O psychology community lost a valued colleague and friend with the passing of Dr. Kimberly “Kim” Perry. Dr. Perry was 36 years old at the time of her death. A native of Wisconsin, Kim resided in the Washington, DC area. Dr. Perry was a gifted scholar, receiving numerous awards, honors, and scholarships throughout her academic career. Kim received her undergraduate degree in Psychology and French from St. Cloud University and her PhD in I-O Psychology from the University of Missouri-St. Louis in 2013. In graduate school, Dr. Perry worked for E-A-S-I-Consult in St. Louis, Missouri while also serving as a statistics consultant, course instructor, and contractor for projects with Maritz, Inc. and Anheuser-Busch, Inc.

Dr. Perry’s work at E-A-S-I-Consult evolved into a position as an I-O psychologist with the U.S. Secret Service in Washington, DC, focusing on personnel selection. At the U.S. Secret Service, she managed the assessment programs for entry-level special agents and uniformed division personnel, facilitated successful execution of a multi-million-dollar contract, drafted multiple agency-wide policies, and revamped the merit promotion process for special agents.

Dr. Perry joined the Personnel Research and Assessment Division of U.S. Customs and Border Protection in 2016. Serving as a personnel research psychologist, she led a number of critical projects for the agency including physical-fitness-test job-analysis and validation studies, a validation of the agency’s entry-level language-testing program, a job analysis of the agency’s new Global Trade Specialist position, a comprehensive time-to-hire law-enforcement benchmarking study, and several survey-research projects. She was also integral to the psychometric analyses for a new computer-adaptive-testing program.

Kim’s colleagues were always impressed by her willingness to volunteer for tasks and her ability to handle a wide range of project work, including complex statistical analyses, contracting, and technical-report writing. She was a sought-after teammate and a mentor, a psychologist with whom all of her colleagues enjoyed working and spending time both at and outside of work. Dr. Perry was a frequent contributor to the SIOP conference and would have given three SIOP presentations in 2020. She was very active, and enjoyed traveling, cake decorating, reviewing books, the French language, and Pure Barre classes. Dr. Perry was a wonderfully complex individual: graceful, poised, quietly elegant, with a dry sense of humor, and engaging smile. She is missed greatly by all who knew her. More information can be found at <https://www.lyndahl.com/obituary/KimberlyKim-Perry>.

Note. The views expressed in this paper are those of the authors and do not necessarily reflect the views of U.S. Customs and Border Protection or the U.S. Federal Government.

In Case you Missed It – New White Paper on Active Aging at Work

Steven Rogelberg

The Alliance of Organizational Psychology is pleased to announce a new white paper on Active Aging at Work. What follows is the abstract.

Demographic changes have led to an increased interest in the topic of active aging among organizational researchers, practitioners, and policy makers. Active aging at work is the process of optimizing opportunities for high levels of physical, mental, and social well-being, work engagement and performance, as well as fair treatment and employment security as workers get older. Workers aging actively are able and motivated to work longer, past traditional retirement ages, and continue to be happy and productive members of the workforce. In this white paper, we outline individual, job, team, organizational, non-work, and societal factors that contribute to active aging at work and derive practical implications for organizations. Active aging at work is influenced by (a) individual difference characteristics and proactive behavior, (b) job design and work-role changes, (c) team diversity and leadership, (d) human-resource practices and organizational climate, (e) caregiving responsibilities and volunteering activities outside of the work context, and (f) age discrimination and availability of employment opportunities. Organizations can foster active aging at work through age-inclusive human-resource practices, including recruitment and retention activities, career management, training and development, work design, health and performance management, and managing the transition to retirement.

To learn more: <https://alliancefororganizationalpsychology.com/knowledge-sharing>

Announcing the \$100,000 Visionary Grant Final Four

Adrienne Colella
Visionary Circle Steering Committee Chair

Here are the four finalists in the first ever Visionary Grant competition! Four project directors will be presenting their proposals in hopes of being the inaugural winner of this prestigious grant.



Play 2 Work: Constructing a Competency-Based Video Gaming Profile to Empower Gen Z Job Seekers

Submitted by:

Jennifer M. Verive, Courageous Choice

Jonathan Levine, Workforce Dynamics

The proposed Play2Work research dramatically alters how Gen Zers seek jobs and explore careers. We will use traditional and machine-learning validation strategies to link individual gamers' commercial video gameplay data to O*NET-based job competencies. The outcome, the "Personal Gaming Profile," is an innovative tool that will be made available to Gen Z gamers to download and share as they wish. The Play2Work research is visionary in concept, methodology, and outcome. It will build on the current literature, significantly advance the employee recruitment and retention arenas, and exponentially enhance the visibility of the field and work of industrial-organizational psychology.



Working Off the Grid: Building Resilience in the GIG Economy

Submitted by:

Susan Ashford, University of Michigan

Brianna Barker Caza, University of Manitoba

Brittany Lambert, University of Colorado, Boulder

To stay relevant in the 21st century, SIOP needs a broader vision, one that captures the particular needs of the estimated 40% of the workforce who will soon work outside of organizations, on their own. We need new theories to understand these workers, who operate with radical autonomy, direct market pressures, little structure, persistent uncertainty, and significant volatility. We will conduct an intervention-based, cross-disciplinary field experiment using experience sampling methodology comparing the experiences of workers in the gig economy to those in traditional organizations to better understand the specific resources and processes that contribute to resilience in each setting.



The banner features a blue and white color scheme. On the left, the SIOP Foundation logo is displayed, consisting of the letters 'SIOP' in a bold, sans-serif font with a stylized bar chart icon integrated into the 'O', and the word 'Foundation' below it. To the right of the SIOP logo is the Visionary Circle logo, which includes a circular graphic and the words 'VISIONARY CIRCLE'. In the center, the text 'Finalist' and 'Human-AI Partnerships' is written in a large, blue, sans-serif font. On the right side of the banner is a portrait of Robert B. Davison, a man with a beard and mustache, wearing a dark suit, white shirt, and patterned tie. Below the portrait, the text 'Robert B. Davison' and 'Project Director' is written in a smaller, blue, sans-serif font.

SIOP Foundation **VISIONARY CIRCLE**

Finalist
Human-AI Partnerships

Robert B. Davison
Project Director

Enabling Peer-Level Partnerships in Human–AI Teams

Submitted by:

Robert B. Davison, Colorado State University

Omri Gillath, University of Kansas

Michael S. Branicky, University of Kansas

Shawn Keshmiri, University of Kansas

Ryan Spaulding, University of Kansas

Inspired by the revolutionary promise of human–AI teaming, this research contributes to the transformation of AI from its current status as human productivity tool to one where AI agents are integrated into systems of work as trusted “peer-level” colleagues. Our interdisciplinary team comprising social science, engineering, healthcare, and work context experts will (a) identify both individual differences and the forces that enable and inhibit human–AI partnering; (b) pilot interventions to increase feelings of security and trust in AI-enabled teammates in two life-critical applications, AI-enabled rural medical specialist and unmanned aerial systems; and (c) amass knowledge portable to other contexts.



The Human Skills Project: A Future-Oriented Work Ontology Toolkit

Submitted by:

Muriel Clauson, University of Georgia

The Human Skills Project will develop a first-of-its-kind tool to identify the most important human skills in the context of emerging technologies and the future of work. The outcome is an easy to use, machine-learning enabled, and future-oriented work analysis tool, which displays findings in a mapped ontology of skills today and in the future. This will produce novel insights that can inform the direction of reskilling programs and research. To effectively reskill a workforce, it is critical to understand the functions best served by technology and by humans—this toolkit lays the foundation for this to be possible.

The Back Story

Where did the final four come from? Last spring, we asked SIOP members “What would you do if you had \$100,000 to shape the future of work?” We received 33 letters of intent from practitioners and scholars who had terrific ideas about how to shape the future of work. The letters were evaluated by the Visionary Circle Steering Committee; 10 project directors were asked to submit full proposals, which were narrowed down to the four finalists.

A bit earlier the Foundation was able to create the Visionary Grant because 82 individuals contributed at least \$1000 each to become members of the Visionary Circle. We raised \$102,000 in total. Visionary Circle members will select the winner from among the four finalists, basing their votes on the written proposals and brief videos prepared by the finalists.

The four finalists were chosen because their projects exemplify being visionary, that is, looking to the future of work, bringing I-O psychology into another realm, asking new questions, and/or engaging with other disciplines. The projects also integrate the science and practice of I-O psychology, address problems critical to the future of work, have clear metrics for success, indicate how the project will change or advance praxis in I-O psychology, and have the potential for facilitating subsequent work and/or additional funding.

With the cancellation of the conference, the SIOP Foundation is considering ways to present these projects, collect votes, and make the announcement of the inaugural winner. Watch social media and SIOP news outlets for the latest information.

The SIOP Foundation Trustees welcome your comments, suggestions, and creative imaginings. Become a member of the next Visionary Circle cohort at <https://www.siop.org/Foundation/Visionary-Circle/Visionaries-VC>.

Our mission is to connect donors with I-O professionals to create smarter workplaces.

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Membership Milestones

Jayne Tegge

From **Chris Madaj**, SIOP Associate Member

SIOP has helped me throughout my career. When I was an undergraduate student, first looking into the field, the resources on SIOP's website gave me insight into what I-O was and what I could do with a degree in I-O. Over the years, the annual conference has allowed me to connect with individuals passionate about the field and to interview with major organizations looking for I-O talent. Now that I'm out of school, SIOP keeps me up to date on the latest trends and allows me to stay in touch with friends and colleagues in the field. I would not be where I am in my career without the help of SIOP.



New Sterling Circle Members

Debra Parker Hermann
Jeffery LePine

Brian O'Connell
Shirley Ross

Amy Bladen Shatto
Patrick Stubblebine

New Pathway to Member Upgrade

Vicente Gonzalez-Roma

Kristen Pryor

Charmaine Swanevelder

New Professional Members

Elizabeth Adams
Ekundayo Akinlade
Shakema Appleton
Zachary Aubol
Jennifer Barbour
Alex Benson
Shala Bloomberg
Alexa Bolwin
Michael Bradshaw
Dave Brooks
Leanne Buehler
Bryan Calkin
Pamela Cannon
Lynn Carlson
Michael Carr
Veronica Caudill
Jihee Choi
Melvin Clark
Anne Conway
Janelle Copek
Brynee Dade

Amber Dancy
Gloria De Leon
Cathy Dean
Taylor DeSantis
Christopher Duffy
Jennifer Elarton
Erin Ellis
Tonia Emery
Denielle Etrheim
Lauren Gambrino
Eva Garza
Jonathan Godwin
Melvin Gonnerman
Concetta Griffith
Smita Gupta
Nena Hart
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Caroline Pannozzo
Jennifer Pastor
Kailey Pazdrski

Tyler Salley
Philipp Schäpers
Sridevi Schaub

Members in the Media

Mariah Clawson

Awareness of I-O psychology has been on the rise thanks to articles written and featuring our SIOP members. These are member media mentions found from January 1, 2020 through February 29, 2020.

We scan the media on a regular basis but sometimes articles fall through our net. If we've missed your or a colleague's media mention, please [send them to us!](#) We push them on our social media and share them in this column, which you can use to find potential collaborators, spark ideas for research, and keep up with your fellow I-O practitioners.

Popular Press Topics

J. Paul Rand is included in multimedia company Best Ever You's 20 [People to Watch](#).

Adam Grant lists his business [book recommendations](#) that have the potential to make a difference in how we think and act.

Richard Boyatzis, Melvin Smith, and **Ellen Van Oosten**'s [new book](#) includes reflective exercises, stories, and research to help managers "coach with compassion."

Nathan Iverson hosts the [Momentum Podcast](#), asking what would happen if we liked our job.

Adam Grant's [book](#) can give advice to those looking to stand out in their career.

Employee Management, Motivation, and Turnover

If something is to be your expertise, it needs to be your [passion](#), says **Nancy Doyle**.

Mark Freeman says [self-leadership](#) is the process of developing the self-motivation needed to perform.

Looking at [cute animal pictures](#) may have beneficial work effects according to **Jennifer Ragsdale** and her team.

Tomas Chamorro-Premuzic says [data](#) plays a role in decisions that affect how a worker is to perform.

Assessments lasting an hour or 2 can feel [clinical](#), says **Neil Morelli**.

Gary Latham says words related to [success](#) increase money made from phone marketers.

Employee Burnout, Work-Life Balance

Verlin Hinsz says people fail to keep [New Year's resolutions](#) because the goals are not specific.

[Tired employees](#) are more likely to cut corners, **Thomas Britt** and **Steve Jex** find.

Kevin Eschleman says people who use their free time creatively are better at [solving problems at work](#).

Leadership, Management, and Organizational Culture

Michele Gelfand and **Avraham Kluger** advise finding the facts before having [difficult talks](#) with colleagues.

Tomas Chamorro-Premuzic brings managers up to speed on changing [hiring practices](#).

Hannes Zacher says getting in touch with colleagues once a month during [a sabbatical](#) will prepare you to work again.

[A terrible boss](#) is more likely to be a man than a woman, says Tomas Chamorro-Premuzic.

Christiane Spitzmueller, **Scott Tannenbaum**, and **Stephanie Payne** are tackling projects focused on [strengthening safety culture](#) in the offshore oil and gas industry.

Exploring the processes of [consulting psychologists](#) can help in coaching and training work, says **William Berman**.

Nicolas Roulin says companies should be [cautious](#) if planning to use AI in the hiring process.

Tara Behrend, **Doug Reynolds**, and Tomas Chamorro-Premuzic explore how [job interviews](#) will change in 2020 and beyond.

Michael Beer suggests a strategy to have [candid conversations](#).

Penny Crow asks what is needed to become an [effective leader](#) in the future workplace.